



Premier commercial kitchens

Design • Supply • Install

Commercial Kitchen Report 08 August 2023

128 Withington Road, Whalley Range,
Manchester,
M16 8FB

Premier Commercial Kitchens Ltd does not accept liability for any matters arising outside the agreed scope of work.

Odour Risk Assessment

EMAQ guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems includes a risk assessment methodology for identifying the potential risk of odour impacts from commercial kitchen operations. The results of the risk assessment may then be used to determine a suitable level of odour abatement to be installed into a commercial kitchen.

Stage 1 - Stainless Baffle Filter

Stage 2 - Pleated Filter

Stage 3 - Rigid Bag Filter

Stage 4 - Ozone

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

Risk Assessment for Odour

Impact Risk

Low to Medium

High

Very high

Odour Control Requirement

Low level odour control

High level odour control

Very high level odour control

Significance Score*

Less than 20

20 to 35

More than 35

* Based on the sum of contributions from dispersion, proximity of receptors, size of kitchen and cooking type:

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 at 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 receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge.
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge.
	Fair	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.
	High	7	Kebab, Vietnamese, Thai or Indian.
	Medium	4	Cantonese, Japanese or Chinese.
	Low	1	Most pubs, Italian, French, Pizza or steakhouse.

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

Dispersion

The risk rating for dispersion relates to the location of the discharge flue of the kitchen extraction system, and the flow rate of the exhaust air at the point of discharge.

The kitchen extraction system, and the flow rate of the exhaust air at the point of discharge.

The kitchen extract system terminates through a high velocity cowl above the roof of the side of the building at a height above the roof eaves. Therefore, based on the information in Table 2, the risk rating for dispersion would be described as moderate.

Proximity to Receptors

The risk rating for proximity to receptors relates to the distance from the point of discharge of the kitchen extraction system to the nearest sensitive receptor. Examples of high sensitivity receptors, as set out in the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Odour for Planning (IAQM, 2018), include residential dwellings.

Residential properties rear to the commercial unit the application site will be within 20m from the flue; therefore, based on the information in Table 2, the risk rating for dispersion would be described as Close.

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902



Size of Kitchen

The risk rating for the size of kitchen relates to the volume of food prepared by the kitchen, as described by the number of covers of a restaurant, or the size of a takeaway.

The unit in question will operate as a takeaway only; therefore, based on the information in Table 2, the risk rating for the size of kitchen would be described as Medium.

Cooking Type

The risk rating for cooking type relates to the type of food prepared in the kitchen, and the cooking methods used.

The Restaurant will serve based on the information in Table 2, the risk rating for cooking type would be described as medium.

Summary

A summary of the risk assessment and the total risk rating for the Takeaway is shown in Table 3. With regard to the significance scores set out in Table 1, the overall risk rating for the restaurant is High; therefore, the extraction system would require a High level of odour control to mitigate the potential odour impacts at local sensitive receptors.

Criteria	Rating	Significance score	comments
Proximity or receptors	Moderate	10	Discharging 1m above eaves at 10-15m/s
Kitchen size	Medium	10	Closest sensitive receptor between 20 and 100m from kitchen discharge

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

Cooking type	Medium	3	Between 30-100 covers or medium takeaway
dispersion	Medium	4	Cantoneese, Italian, French or pizza moderate
Overall risk rating	High	27	Level of odour control required

Odour Mitigation

The odour risk assessment has identified that the proposed Take away would require a medium level of odour control (see Table 3). The EMAQ guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems outlines that abatement systems offering a moderate level of odour control may include:

1. Fine filtration or electrostatic precipitator (ESP) followed by carbon filtration (carbon filters rated with a 0.1-0.2 second residence time); or
2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.

In addition to the recommended mitigation measures above, canopy hoods installed above all cooking areas. The canopy hoods are fitted with washable grease baffle filters. Grease laden air passing through the filter is forced through direction and velocity changes, depositing grease on the vanes, which is then drained from the filter. The use of baffle filters, which typically have a grease removal efficiency of 65-80%, will help prevent contamination of the fine filters of ESP. Mesh filters are not recommended as they do not provide a flame barrier.

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

The extract flow rate of the system should be sufficient to ensure a capture velocity at the extract canopy appropriate to the type of cooking to be undertaken. An adequate capture velocity will also help prevent untreated odour emissions due to leakage from the building, i.e. through doors and windows.

Conclusions

The odour risk assessment has identified that the Premise Would have a High risk rating with regard to odour effects.

An odour abatement system consisting of fine filtration or an ESP followed by carbon filtration (with a 0.1-0.2 second residence time) or a UV ozone system is recommended.

It is judged that there will not be a significant risk of odour impacts from the Restaurant of the extract system installed, as specified, a High level of odour control is installed. There should be no constraints to the development with regard to odour.

References

Defra (2005) Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems.

EMAQ (2018) Control of Odour and Noise from Commercial Kitchen Exhaust Systems.

IAQM (2018) Guidance on the Assessment of Odour for Planning (V1.1).

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

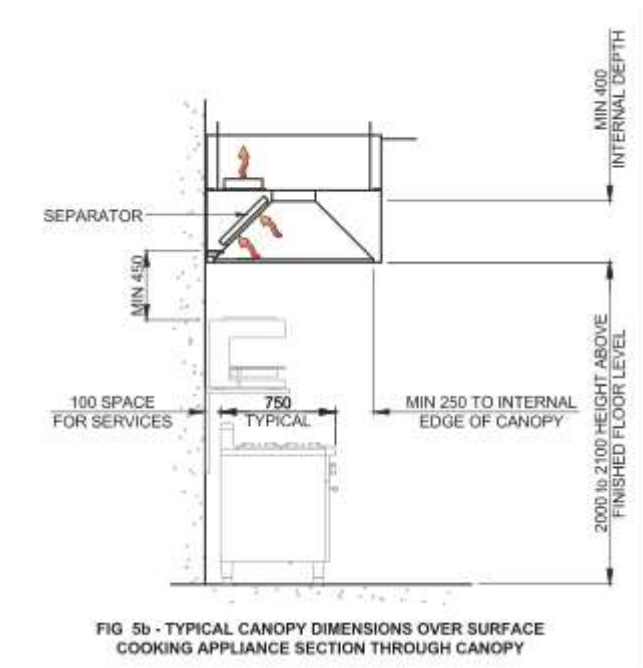
Design • Supply • Install

Further Additional details

The canopy will be a straight overhead wall mounted hood. Constructed of 430 grade stainless steel with ultrafine grains. The stainless steel will be designed with a plain polish.

The canopy hood will be located on the Ground floor in the kitchen area.
Tapered Shape 3550 x 1200 metres long.

The extraction rate for the canopy will be heavy duty no less than 1.75 m³/s
6300 m³/h



ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

Ductwork

The ducting will start from the Rear of the canopy hood going through the wall leading via corridor exiting through the rear to then direct 1000mm above eaves. The external extractor fan and ductworks are in accordance with HVCA Specification number DW /144.

The ductworks will be terminated 1meter above the eaves with a jet cowl, injecting the contaminated air vertically.

Extraction Fan

The extraction fan to be installed is a Acoustic Box Fan S&P CVAT/4-12000/560N D 2,2kW this Accompanied with anti-vibrations mounts

Air supply fan

The air supply fan to be installed is a S&P TCBB/4-500/H

Cleaning & Maintenance

Cleaning of baffle filters is to be twice per week along with a further in-depth clean of system every 3 months

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

The velocity through the grease separators and grilles.	2.1m/s
The velocity in the ductwork and at the bell mouths.	20m/s
The supply and extract flow rates.	Supply 1.31m ³ /s Extract 1.75m ³ /s
Ambient and air temperatures in the ductwork.	
Air flow rate through the canopy itself must be verified and not just at the fan as this does not take into account leakage throughout the system.	
The total pressure drop for the system.	636pA
Starting and running currents used by the fan(s).	Supply 0.8kw Extract 2.2kw
Sound levels in the kitchen	40dBa
CO and CO ₂ levels adjacent to the canopies and in the centre of the room when gas fired appliances are used.	

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

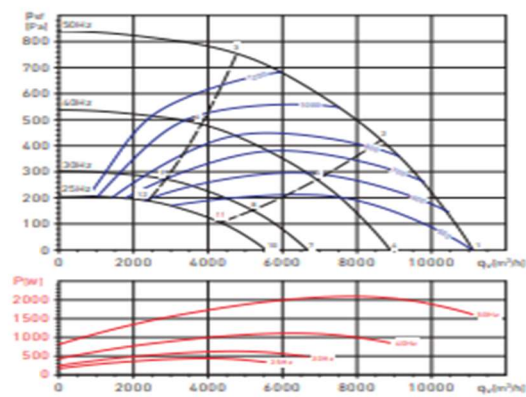
EXTRACTION FAN DETAILS:

ACOUSTIC CABINET FANS CVAB-N / CVAT-N Series

PERFORMANCE CURVES - ACOUSTIC CHARACTERISTICS

- q_v : Airflow in m^3/h .
- p_{st} : Static pressure in Pa.
- P_i : Input power in W.
- SFP: Specific fan power in $W/m^3/s$ (blue curves).
- Performance data in accordance with ISO 5801 and AMCA 210-99 Standard

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



Working point	63	125	250	500	1000	2000	4000	8000	LwA
1 Inlet	55	77	79	78	76	81	72	66	86
1 Outlet	63	78	78	81	81	78	71	60	87
1 Break-Out	49	64	67	64	62	63	53	46	72
2 Inlet	51	76	78	77	76	75	69	64	84
2 Outlet	60	76	80	77	81	73	67	60	85
2 Break-Out	46	64	67	63	61	58	51	44	71
3 Inlet	56	75	76	74	73	72	67	63	81
3 Outlet	60	74	74	78	74	70	64	58	81
3 Break-Out	51	65	66	61	60	55	49	43	70
4 Inlet	50	72	74	73	71	76	67	61	81
4 Outlet	58	73	73	76	76	74	66	55	82
4 Break-Out	44	60	63	59	58	59	49	41	67
5 Inlet	46	71	73	72	71	70	64	59	79
5 Outlet	55	71	75	72	76	68	62	55	81
5 Break-Out	41	59	62	58	57	53	46	39	66
6 Inlet	51	70	71	69	68	67	62	58	77
6 Outlet	55	69	69	73	69	65	59	53	77
6 Break-Out	46	60	61	56	55	50	45	39	65
7 Inlet	44	66	68	67	65	70	61	55	75
7 Outlet	52	67	67	69	70	67	60	49	76
7 Break-Out	38	53	56	52	51	52	42	35	61
8 Inlet	39	65	67	66	64	64	57	52	73
8 Outlet	49	65	69	66	70	62	56	49	74
8 Break-Out	34	53	56	52	50	47	40	33	60
9 Inlet	45	64	65	63	62	61	56	52	70
9 Outlet	49	63	62	66	62	59	53	47	70
9 Break-Out	40	53	55	49	49	44	38	32	59
10 Inlet	40	62	64	63	61	66	57	51	71
10 Outlet	48	63	63	65	66	63	56	45	72
10 Break-Out	34	49	52	49	47	48	38	31	57
11 Inlet	36	61	63	62	61	60	53	48	69
11 Outlet	45	61	65	62	66	58	52	45	70
11 Break-Out	31	49	52	48	46	43	36	29	56
12 Inlet	41	60	61	59	58	57	52	48	66
12 Outlet	45	59	59	62	59	55	49	43	66
12 Break-Out	36	49	51	45	45	40	34	28	55

www.soterpalau.com

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

AIR SUPPLY FAN DETAILS:

Model	Speed (r.p.m.)	Diameter (mm)	Maximum absorbed power (W)	Maximum current (A)		Sound pressure level* (dB(A))	Maximum airflow (m³/h)	Weight (kg)	Speed controller		Variable frequency inverter	
				a 230 V	a 400 V				REB	RMB/T	VFTM	VFKB
SINGLE PHASE 2 POLE												
TCBB/2-250/H	2680	250	123	0,5	–	62	1.680	8	–	–	–	–
SINGLE PHASE 4 POLE												
TCBB/4-250/H	1430	250	44	0,2	–	42	900	8	REB-1	RMB-1,5	–	–
TCBB/4-315/H	1435	315	105	0,6	–	52	1.990	11	REB-1	RMB-1,5	–	–
TCBB/4-355/H	1420	355	120	0,6	–	52	2.460	13,2	REB-2,5	RMB-1,5	–	–
TCBB/4-400/H	1410	400	277	1,1	–	60	5.050	15,5	REB-2,5	RMB-3,5	–	–
TCBB/4-450/H	1410	450	591	2,5	–	63	6.940	21	–	–	–	–
TCBB/4-500/H	1410	500	636	2,8	–	66	7.500	25	REB-5	RMB-3,5	–	–
TCBB/4-560/L	1405	560	1289	6	–	68	11.990	33	REB-10	RMB-8	–	–
TCBB/4-560/H	1400	560	1308	6	–	69	12.170	34,7	–	–	–	–

Stage 1

Stainless Steel Baffle Filters

APPLICATIONS
Suitable for use in all catering applications to remove airborne grease

OPERATION
It is universally recognised that there is an increasing need to maintain and improve hygiene standards and 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.

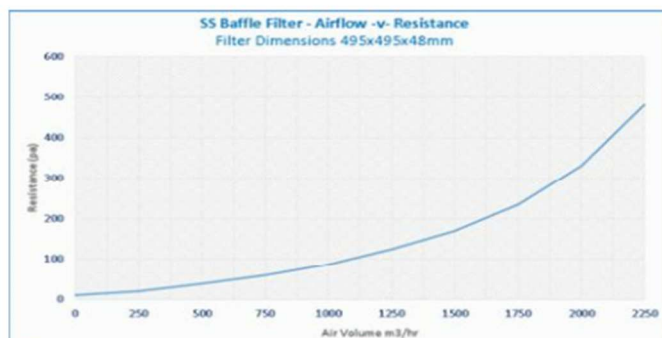
CONSTRUCTION
Robustly manufactured in stainless steel, a series of vertical vanes are housed in a channel frame with each of the baffles strategically aligned to provide the highest potential for grease removal. Due to the smooth nature of the vanes the grease naturally runs downwards through the drainage holes and into the collecting trays normally provided within the canopy holding casings.



- Consistent performance & long life
- Certified to DIN18869
- Robust construction
- Range of standard sizes
- Efficient removal of grease & oil

STANDARD RANGE (HxWxD)

495x495x48mm 395x495x48mm
495x395x48mm 495x245x48mm
595x595x48mm



ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

Fine Filtration Details:

Stage 2

Applications

The G4 Pleated Panel is suitable for use as a prefilter for higher grades of air filtration or for use as a simple filter for general use within air handling systems where the use of glass-fibre is unacceptable.

Construction

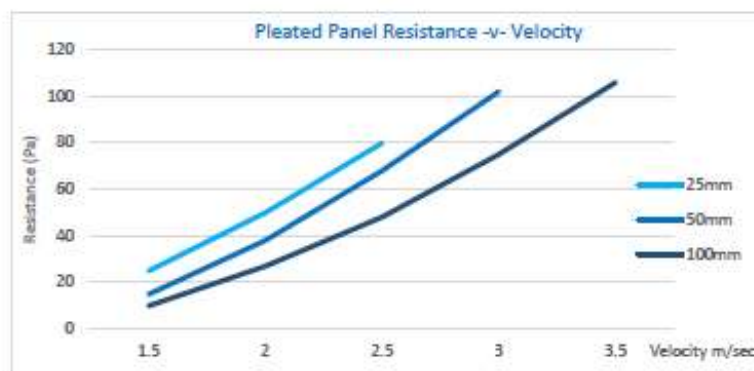
The G4 Pleated Panel contains a core of pleated non-hygroscopic and hydrophobic fibrous media designed specifically for use in air filtration. The media is manufactured with a graded fibre density to ensure optimum and even dust retention combined with low initial resistance and is thermally bonded onto a galvanised steel support mesh for maximum physical stability. The aerodynamic pack is then fully bonded into a moisture resistant, rigid, white lined card frame and fitted with an airflow indicator.

Pleated G4 Panel Filter



- ISO Coarse 60% to ISO 16890
- Pre-filtration with low air resistance yet maximum protection
- Available in a vast range of sizes
- Bespoke sizes readily available
- Long life and robust construction
- Fully incinerable for easy disposal
- Made in Britain

Filter Reference	Nominal size (mm)	Rated Velocity (m/sec)	Efficiency rating (EN779)	Initial resistance at rated Velocity (Pa)	Rated final resistance (Pa)	Maximum Humidity	Maximum temp (°C)
FF-PL1	25	1.5	G3	25	250	80% RH	80
FF-PL2	50	2.0	G4	38	250	80% RH	80
FF-PL4	100	3.2	G4	78	250	80% RH	80



ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

Stage 3

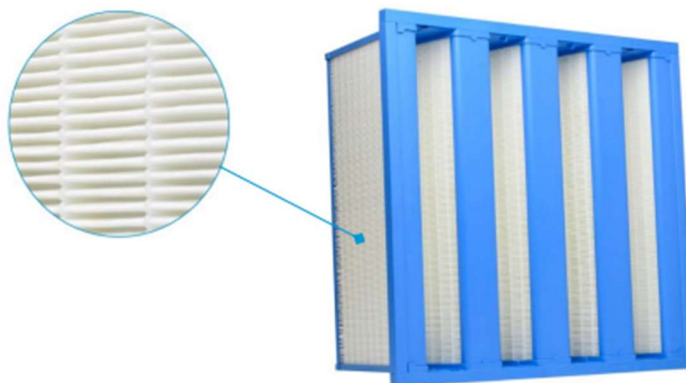
PRODUCT DATA SHEET ePM1 55% F7 RIGID FILTER

APPLICATIONS

The ePM1 55% F7 Filter is designed for use in ventilation systems where a high standard of protection, combined with optimum energy efficiency of HVAC systems is of paramount importance. Often used as part of a multi-stage filtration system, this range of filters is commonly applied in environments where consistency of performance cannot be compromised and highly effective protection of building occupants, critical processes & other ventilation system components, alongside outstanding filter service life is desired.

CONSTRUCTION

Several pleat-packs form the basis of the filter design, and these are packaged into a lightweight, yet robust frame. The filter media itself is manufactured to exacting standards and uses a mini-pleated construction, whereby separators allow a huge surface area to be presented to airflow,



without compromising on dustholding capacity. This allows for high air volumes to be filtered at a consistent efficiency and a much-reduced resistance to flow. This design can deliver significant energy savings owing to the reduction in power needed to push air through the system. Where higher volumes of delivered air are to be prioritized, this can also be achieved without exceeding the rated filter capacity.

- ePM1 55% (ISO16890) / F7 EFFICIENCY (EN779:2012)
- HIGHLY ENERGY-EFFICIENT
- OPTIMISED FILTER DESIGN
- CONSISTENT MECHANICAL FILTRATION PERFORMANCE
- EXTENDED SERVICE LIFE
- MADE IN BRITAIN

Face size (mm)	Rated volume (m ³ /hr)	Efficiency (ISO16890)	Efficiency (EN779:2012)	Initial resistance (Pa)	Final resistance (Pa)	Max. humidity (% RH)	Max. temperature (°C)
592 x 592	3400	ePM1 55%	F7	79	300	100	80
592 x 492	2720	ePM1 55%	F7	79	300	100	80
592 x 287	1700	ePM1 55%	F7	79	300	100	80

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

Stage 4 – OZONE

Process Information

Oxidation using ozone and activated oxygen ions is used to treat odour emissions from commercial and industrial kitchen processes (DEFRA, 2005: Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems).

The OC1 has been specifically designed for use in commercial kitchens. The system injects ozone into the kitchen extraction canopy or associated duct work where it reacts with odours, which are oxidized in a chemical reaction, which results in the production of carbon dioxide and water vapour. The ozone itself is consumed during the process and is converted back into oxygen.

The benefits of purchasing an OC1 unit over traditional UV/Ozone systems are as follows:

- Compact, lightweight and quiet operation so is less obtrusive
- Quick and easy low cost installation
- Low capital and running costs – up to 50% less than traditional UVC systems
- Injection into ductwork – adding negligible back pressure to the system so requiring less energy to push air through the air handling system. This means less ductwork modifications
- The OC1 maintains efficiency as they remain outside of the air stream, they also require less maintenance and require less cleaning.
- Tested to EN13725:2003, CE Approved



ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

TECHNICAL INFORMATION

Ozone Output	24g/hr ozone output
Housing dimensions	300mm wide x 300mm length x 150mm height
Housing material	Stainless Steel powder coated white/grey
Duct work connection	100mm circular
Volume flow rate in ductwork	Up to 2m ³ /s per unit, subject to cooking odours.
Air residence time inside chamber	>0.1 seconds
Pressure drop	N/A
Weight of unit	5Kg approx.
Two individual Light Indicators	Green Power On / Green Ozone On
Electrical requirements	240V / 1 ph / 50/60Hz
Power requirements	168W
Safety	Built in Air pressure switch

INSTALLATION

It is recommended to locate the units with an injection point located closest to the source of odours (i.e. Canopy plenum or nearest accessible point on ductwork, in order to maximize dwell time. In any case the dwell time must be no less than 1 second.

The units in built air pressure switch is activated by the installation of the black three pinned connector to the unit to the sensor lock connector.

MAINTENANCE

An optional service contract is available which entails a yearly inspection of the unit.
Please contact us for further information and pricing.

ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902





Premier commercial kitchens

Design • Supply • Install

Oxidation using ozone and activated oxygen ions is used to treat odour emissions from commercial and industrial kitchen processes (DEFRA, 2005: Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems).

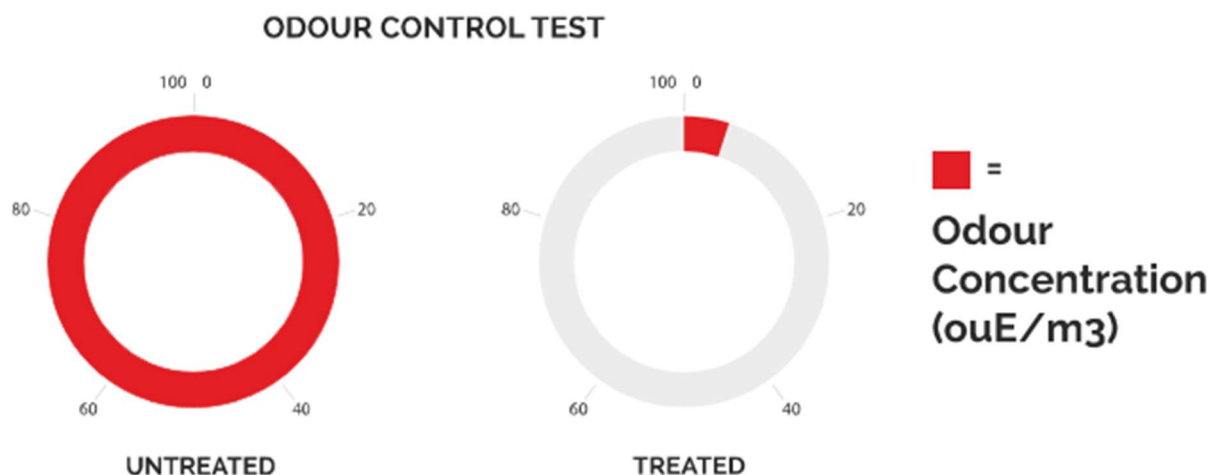
The OC2 has been specifically designed for use in commercial kitchens. The system injects ozone into the kitchen extraction canopy where it reacts with odours, which are oxidized in a chemical reaction, which results in the production of carbon dioxide and water vapour. The ozone itself is consumed during the process and is converted back into oxygen.

TESTING PROCEDURE

Independent tests were carried out using olfactometry. A number of individual contaminated air samples were taken and then examined.

During the tests foods with the following cooking odours (fish, garlic, onions, curry spices, bacon, burgers, various fried foods) were used in order to provide a varied and accurate results with both, with and without treatment with an OC2 unit.

Air samples which were treated with the OC2 unit, produced an **odour reduction** of up to **95%**, for clear and easy to understand results we have shown this in terms of the graph/chart below.



ADDRESS: 4A BAY STREET,
BLACKBURN, BB1 5NJ

TEL: 0161-660-3055 / 0333-305-3381
EMAIL: OFFICE@PREMIERCK.CO.UK

COMPANY REG: 13869902

