The Commercial Kitchen Filtration Experts

Specification & EMAQ Report

Project: Ambassadors Hotel, London

Prepared for: Tom Ward.

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Date: 16th September 2019

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Interpretation of Requirements

Following our conversation today I am pleased to provide an equipment selection for an odour control solution.

As with any project we get involved in we always recommend to our clients that they should closely follow the EMAQ guide for guidance on odour control equipment selection.
This ensures that what they propose will be in line with local authority's requirements and if the system is maintained correctly they will not exhaust nuisance odours leading to complaints from nearby residents.

With this in mind I carried out a risk assessment as detailed in EMAQA Guide.
Taking into consideration the level of discharge, proximity of receptors, size of kitchen and cooking type your project requires a VERY HIGH level of odour control to comply.

We have scored as below and as taken from Annex C: Risk Assessment for Odour;

Dispersion = 20
Proximity of receptors = 10
Size of kitchen = 5
Cooking type = 10
Total score = 45

The type of odour abatement system that complies is as below, taken directly from the EMAQ Guide and must be to a VERY HIGH level of control;

Odour arrestment plant performance

VERY HIGH level odour control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.4-0.8 residence time).
2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.

Impact Risk	Odour Control Requirement	Significance Score*
Low to Medium	Low level odour control	Less than 20
High	High level odour control	20 to 35
Very high	Very high level odour control	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.
	Far	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.

The System

The first stage of control for each of the two extract systems should be our Electrostatic Precipitator.

As our ESP's have been specifically designed for kitchen extract and not modified from industrial use, they have integral sumps to collect the oil, grease and smoke particles filtered out of the exhaust; this not only simplifies servicing but eradicates potentially dangerous spillage from the bottom of the units and greatly cuts down on flammable build-ups within the duct run.
The ionisation voltage has been designed to run at a negative potential which enhances the ionisation of particles and also produces more Ozone which is helpful in reducing odours in kitchen applications.
Our ESP units fit in-line with the kitchen ducting and can be configured modularly to cope with all extract volume requirements.

The Electrostatic Precipitator is a very efficient means for separating the particulate phase; operating efficiency when clean can be as high as 98% at particle sizes down to 0.01 micron.

The Electrostatic Precipitator does not present a high-pressure loss (175PA approx. dependant on air flow). This gives a specific advantage in that most standard Kitchen extractor fans will have the capability of overcoming this small differential.
This is particularly advantageous when it is considered that if the pressure loss were high larger noisier fans would probably be necessary resulting in potential noise pollution.

UVC

After the ESP our UVC unit should be fitted; this uses UV technology by producing Ozone to neutralise the cooking odours.

This will designed and installed with a two second dwell time ensuring the system designed meets EMAQ guidelines.

Our UV-C (short-wavelength ultraviolet radiation) technology is based on the synergy which occurs when ozone and ultra violet light are combined.

Each individual unit sits directly in the air stream of the kitchen extract duct and can feature from six to eighteen high output UV-C lamps supplied in racks of six.
The number of racks specified will be dependent on the cooking process coupled with the air flow volume which will dictate the amount of ozone needed.

Our UV-C units also feature a photo-catalytic liner which enhances the production of hydroxyl free radicals when exposed to UV light.
The ozone combined with the hydroxyl free radicals, both highly reactive oxidants, then act to oxidise odours and grease, permanently destroying and altering the molecular structure of the compounds.
As with our UV-O range for optimum performance we would recommend 2 seconds of dwell time to allow the ozone to work effectively upon the malodorous gasses within the duct.
As you can see the system that has been specified is in line with EMAQ guidance.

Specification

1No. ESP 4500Ei Unit.

Specification per unit

Air Volume Max*	2.1m³/s
Electrical Supply	220/240V 50Hz 1ph
Power Consumption	50 W
Weight each	118kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

1No. ESP 6000Ei Unit.

Specification per unit

Air Volume Max*	2.8m³/s
Electrical Supply	220/240V 50Hz 1ph
Power Consumption	50 W
Weight each	118kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

3No. UV-O 1000 Unit.

Specification per unit

Air Volume Max	2m³/s
Electrical Supply	220/240V 50HV 1ph
Power Consumption	700W
Weight	50 Kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

The Commercial Kitchen Filtration Experts

QUOTATION DS- 25106

Customer: MTT Limited.

Prepared for: Tom Ward

Project: Ambassadors Hotel. London

Prepared by: Dave Sears

Date: 16th September 2019

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Interpretation of Requirements
Please note that, If it is intended to char grill at this application please note that you will need a double pass ESP system ideally designed at no more than 85% of maximum design volume.

Specification – Supply only

BASEMENT KITCHEN

1No. ESP 4500EI Unit.
Specification per unit

Air Volume Max*	2.1m³/s
Electrical Supply	220/240V 50Hz 1ph
Power Consumption	40 W
Weight each	118kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

1No. UV-O 1000 10 Unit.
Specification per unit

Air Volume Max	2m³/s
Electrical Supply	220/240V 50HV 1ph
Power Consumption	700W
Weight	50 Kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

GROUND FLOOR KITCHEN

1No. ESP 6000EI Unit.
Specification per unit

Air Volume Max*	2.8m³/s
Electrical Supply	220/240V 50Hz 1ph
Power Consumption	50 W
Weight each	118kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

2No. UV-O 1000 10 Unit.

Specification per unit

Air Volume Max	2m³/s
Electrical Supply	220/240V 50HV 1ph
Power Consumption	700W
Weight	50 Kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

How an Electrostatic Precipitator (ESP) Works

As our ESP's have been specifically designed for kitchen extract and not modified from industrial use, they have integral sumps to collect the oil, grease and smoke particles filtered out of the exhaust; this not only simplifies servicing but eradicates potentially dangerous spillage from the bottom of the units and greatly cuts down on flammable build-ups within the duct run.
The ionisation voltage has been designed to run at a negative potential which enhances the ionisation of particles and also produces more Ozone which is helpful in reducing odours in kitchen applications.
Our ESP units fit in-line with the kitchen ducting and can be configured modularly to cope with all extract volume requirements.

Our ESP range comprises of: -

- ESP 1500EI which can handle up to 0.7m3/sec of air flow volume
- ESP 3000EI which can handle up to 1.4m3/sec of air flow volume
- ESP 4500EI which can handle up to 2.1m3/sec of air flow volume
- ESP 6000EI which can handle up to 2.8m3/sec of air flow volume

Efficiency

The Electrostatic Precipitator is a very efficient means for separating the particulate phase; operating efficiency when clean can be as high as 98% at particle sizes down to 0.01 micron. However, as the plates and ioniser become laden with particles during the use the efficiency will reduce due to the insulating effect of the dirt.

Pressure Loss

The Electrostatic Precipitator does not present a high-pressure loss (175PA approx. dependant on air flow). This gives a specific advantage in that most standard Kitchen extractor fans will have the capability of overcoming this small differential.
This is particularly advantageous when it is considered that if the pressure loss were high larger noisier fans would probably be necessary resulting in potential noise pollution.

How the UV-O Range works

Our UV-O range includes:-

- UV-O 500 which handles up to 1 m3/sec of air flow volume
- UV-O 1000 which handles up to 2 m3/sec of air flow volume

The UV-O range uses UV-C technology to produce ozone and hydroxyl free radicals to oxidise cooking odours through a process of ozonolysis.

Unlike other UV-C systems, our UV-O units are located outside of the kitchen extract duct and are connected via a spigot and small diameter ducting.

Although it is widely accepted that the best way to apply UV-C is directly in-line with the air stream itself, this can incur the problem of the lamps getting dirty and thus greatly reducing their effectiveness.

With our UV-O units the air flow does not come from the exhaust duct but from the ambient air around the unit, which is filtered on entry. This means that it is able to provide a uniform supply of ozone and hydroxyl free radicals into the extract system with an extremely low pressure loss.
As with our UV-C range, for optimum performance we would recommend 2 seconds of dwell time to allow the ozone to work effectively upon the malodorous gasses within the duct.

Installation

This unit's tried and tested UV-C technology allows for the siting of commercial kitchens in locations such as residential areas and shopping centres, where previously planning permission would not have been granted.
After extensive research and development Purified Air are able to devise the best combination of lamps at different wave lengths, which when combined with the photo catalytic liner provides the most effective odour control.

Simple to install, with low maintenance and running costs, as the systems have been designed to be fitted outside of the duct run these units are ideal for retrospective installations.

Technical & Safety Considerations

These units must always be installed on the negative side of the fan and the system should be switched via an interlock both connected to the fan and an airflow switch connected to the unit itself which will ensure that in the event the unit is disconnected from the duct or if the extract system is switched off the system will be isolated. The unit can only discharge into duct which is going to atmosphere the unit must not discharge into an enclosed space.

Ultra-Violet Band C light is the most powerful and dangerous of the three bands, so to ensure safety the UV-C technology is secured behind locked panels. The system has also been engineered to shut down automatically when the panel is unlocked. However, since the lamps typically have a minimum life of twelve months and with the system able to operate even if one lamp fails at optimum efficiency it is unlikely that, apart from routine servicing by experienced engineers, the system will ever need to be opened.

All electrical work to be to the relevant standard with the supply to our odour control equipment interlocked with the extract fan so it cannot function independently.

Location of unit, wiring and control will be subject to a final site survey on installation.

*For highly polluted environments we recommend working between 70 and 90% of maximum design dependent on the levels of pollution.

IMPORTANT- Please note care must be taken with the design of the inlet and outlet tapers onto our products. The air volume must be within the design capabilities of the product and the spread across the face of the unit must be uniform to ensure optimum performance. If you need any assistance with the design please ask, we will be happy to assist

Price

Basement Kitchen

1 No ESP4500EI	£ 4,185.00+VAT
1 No UV-O 1000 10 Lamp unit(s)	£ 3,220.00+VAT

Ground Floor Kitchen

1 No ESP6000EI	£ 5,250.00+VAT
2 No UV-O 1000 10 Lamp unit(s)	£ 6,440.00+VAT
Commissioning	£ 550.00+VAT
Delivery	£ 220.00+VAT
Total	**£19,865.00+VAT**

Lead Time
5 - 7 days from receipt of order.

Due to the width of the ESP6000 unit it must be installed on a plant deck to allow safe removal of the collector cells. Please discuss with your account manager at design stage'

Installation of grease smoke and odour equipment must be made on the negative side of the fan and the systems must be switched via an interlock to ensure they are only operational when the extract fan is operational. If there is ductwork inside the premises on the positive side of the fan please ensure that it is completely sealed so as not to let fumes or odour control compounds back into the premises. In certain instances some equipment can be installed on the positive side of the fan but please discuss this with our technical department and ask them to provide a design statement to confirm that it can be done.

Validity
Prices are valid for 90 days.

Payment Terms
Standard.

Guarantees
Units are guaranteed for one year providing maintenance is carried out in accordance with manufacturer recommendations.

Terms and Conditions
This quotation has been prepared taking into account our standard terms and conditions and is subject to these terms and conditions which are attached.
Unless otherwise agreed in writing the terms and conditions of this agreement shall apply to any order placed by the customer. In the event of any inconsistency between these terms and those passing between the parties these terms shall prevail. No variation of the terms and conditions shall be allowed unless expressly accepted in writing.

TERMS AND CONDITIONS

1. Interpretation

1.1 In these conditions:-
"Purchaser" means the person who offers to purchase the goods and whose name and address appear on the order constituting such offer.
"Company" means Purified Air Limited (registered in England under Company No. 1827831)
"Goods" means the goods (including any instalment of the goods or any parts for them) which the Company is to supply in accordance with these conditions.
"Conditions" means the standard terms and condition of sale set out in this document. "Contract" means the Contract for the purchase and sale of the Goods.
"Writing" includes cable, facsimile transmission, **e-mail** and comparable means of communication. Dealer installer or maintenance company means a person or company appointed by Purified Air Limited.

1.2 These conditions are deemed as those in force between the Company and the Purchaser and no other terms or conditions will replace these conditions unless authorised and specifically agreed in writing by the company.

2. Basis of the Sale

2.1 An invoice will be deemed to be accepted if not queried in writing within 7 days of the invoice date.

2.2 In entering into the Contract the Purchaser Acknowledges that it does not rely on and waives any claim for breach of any representations concerning the goods unless such representations are confirmed in writing by or on behalf of his company.

2.3 The Purchaser further acknowledges that prior to submitting an offer or order for the Goods it has received a copy of these Conditions and makes its offer to purchase in full knowledge and acceptance thereof, unless agreed specifically in writing by the Company and the Purchaser.

2.4 No quotation or estimate given by the Company shall constitute an offer for sale and no contract shall exist until an offer or order has been accepted in writing by the Company whereupon these conditions shall be binding to the exclusion of any other items or conditions.

3. Orders and Specifications

3.1 The Purchaser shall be responsible to the Company for ensuring the accuracy of the terms of any order (including any applicable specification) submitted by the Purchaser and for giving the Company any necessary information relating to the Goods within a reasonable time to enable the Company to perform the Contract in accordance with its terms.

3.2 The quantity, quality and description of any specification for the Goods shall be those set out in the Purchaser's order which shall be in accordance with the Company's quotation unless agreed otherwise by the Company in its written acceptance of the Purchaser offer

3.3 The Company reserves the right to make any changes in the specification of the Goods which are required to conform with any applicable safety or other statutory requirements which do not materially affect their quality or performance.

3.4 No order which has been accepted by the Company may be cancelled by the Purchaser except with the agreement in writing of the Company.

3.5 In the event of unauthorised cancellation and/or return of **standard** goods the Purchaser shall be responsible to the Company for a charge equivalent to 25% of the value of the contract cancelled including the value of goods and services including labour costs as quoted. In the event of unauthorised cancellation and/or return of specially made goods or systems the Purchaser shall be responsible to the Company for a charge equivalent to 100% of the value of the contract cancelled.

3.6 The Company reserves the right to change the order to goods of equivalent capacity and nature in the event that the original goods ordered are not available.

4. Price of the Goods

4.1 The price of the Goods is fixed unless otherwise stated or agreed in writing between the parties.

4.2 The price is exclusive of VAT.

5. Terms of Payment

5.1 Subject to any special terms agreed in writing between the Purchaser and the Company, the Company shall be entitled to invoice the Purchaser for the price of the Goods on or at any time after delivery/collection.

5.2 Whatever terms are agreed the Purchaser will pay in full within 30 days of receipt of the company's invoice.

5.3 If the Purchaser fails to make any payment on the due date then without prejudice to any other right or remedy available to the Company the Company shall be entitled to charge the Purchaser interest on the amount unpaid at the rate of 2% per month chargeable from the date of the invoice until payment in full is made (a part of a month being treated as a full month for the purpose of calculating interest).

5.4 Any discount offered by the Company shall cease to apply if payment in full is not made on the due date and where payment is by instalments any discount given shall be recoverable by the Company in the event of late payment of any instalment. If payment is received late and discount taken, then that payment will be considered as a part payment and the discount amount will remain outstanding and due. Recovery of discount is at the Company's discretion and no allowances made shall form a precedent.

6. Delivery

6.1 Delivery of the goods shall be deemed to take place when they are actually delivered/collected by/to the Purchaser or his representative to the Purchaser's premises or other premises designated by the Purchaser and accepted in writing by the Company.

6.2 The time for delivery may be extended by the Company for a reasonable period if delay in delivery is by reason of any cause beyond the Company's reasonable control provided that the Company shall have notified the Purchaser immediately (a minimum of 24 hours) on becoming aware of the cause of any such delay.

6.3 If the company is not notified by the Purchaser of cancellation/postponement of delivery and Goods having been despatched have to be returned for re-delivery then a charge will be made together with a handling and administration cost.

6.4 Where the Goods are to be delivered by instalments each delivery shall constitute a separate contract and failure by the Company to deliver any one or more of the instalments in accordance with these conditions or any claim by the Purchaser in respect of any one or more instalments shall not entitle the Purchaser to treat the Contract as a whole as repudiated.

6.5 Goods will not be left without signature by an authorised representative of the Purchaser.

6.6 The company's deliverer will be entitled to assume that the person signing for the goods is an authorised representative of the Purchaser in that that person holds himself out as such and in all circumstances it would be reasonable to assume that the Assignor was so authorised.

6.7 Damage claims must be notified in writing within **24 hours** from date of delivery. No claims will be accepted, whatever the reason, if notified more than **24 hours** after delivery.

6.8 Damage claims will not be accepted for deliveries signed for as received in good condition.

7. **Property Risk and Insurance**

7.1 Until the price payable has been paid to the Company in full and the Customer has complied with all its obligations under the Contract the Goods shall remain the property of the Company. The Company shall have the right at any time prior to the price being paid in full to repossess the Goods whether they be at the premises of the Customer or elsewhere and without prejudice to the other rights and remedies of the Company under this Contract, the Customer shall be liable for all transport and other costs and expenses of recovering the same.

7.2 If the Customer should sell or otherwise dispose of the Goods to a Third Party at any time before the Company has received full payment for the same, the Customer shall hold and keep the proceeds of sale on trust and/or in a fiduciary capacity for the Company, and the said proceeds of sale shall be and remain the property of the Company. For the avoidance of doubt, the Customer shall place the said proceeds of sale in a separate bank account in the name of the Company in order to be identifiable as the Company's property.

7.3 Notwithstanding the foregoing the Goods shall be entirely at the risk of the Customer in all respects from the time of leaving the premises of the Company whether collected by the Customer or not.

7.4 The Customer shall adequately insure the Goods with reputable insurers against all insurable risks from not later than the time of their leaving the premises of the Company and at the same time shall also insure them for the benefit of the Company and the Customer and all persons in any way connected with the Goods against all known and insurable risks to persons and property which might in any way arise out of the Goods or their use and such insurance shall be for the sum of one hundred thousand pounds at least on terms whereby the insurers shall be precluded from any rights of subrogation or other rights whereby they would be capable of claiming of claiming against the Company or any of its employees or other persons in any way connected with it.

8. Warranties and Liability

8.1 Subject to the conditions set out below the Company warrants that the Goods will correspond with their specification at the time of delivery and will be free from defects in material workmanship for a period of 12 months from the date of installation or 12 months from the date of delivery whichever is the shorter period.

8.2 Manufacturers extended warranty – In some cases the manufacturer will offer an extended parts warranty in excess of 12 months. These extended warranties will be covered specifically in the quotation. With air conditioning installations it is always the case that labour, condense pumps, ancillaries and ventilation systems are only guaranteed for twelve months.

8.3 The above warranty is given by the Company subject to the following conditions:

(i) The Goods are installed by an authorised dealer or installer of the Company.

(ii) The goods are maintained in accordance with the manufacturer's instructions by an authorised dealer or installer of the Company.

(iii) Warranty forms and faulty parts must be returned within 21 days of advice date and, if not, an invoice will be issued for payment without further notice.

(iv) The Company shall be under no liability in respect of any defect in the Goods arising from any drawing, design or specification supplied by the Purchaser, or for defects caused by faulty installation.

(v) The Company shall be under no liability under the above warranty if the total price for the Goods has not been received by the due date for payment

8.4 Where any valid claim in respect of any Goods which is based on any defect in the quality or condition of the Goods or their failure to meet specification is notified to the Company in accordance with these Conditions the Company shall be entitled to replace the Goods (or the part in question) free of charge or at the Company's sole discretion refund to the Purchaser the price of the Goods (or a proportionate part of the price) but the Company shall have no further liability to the purchaser.

9 Force Majeure

The Company shall not be liable to the Purchaser or be deemed to be in breach of the Contract by reason of any delay in performing or any failure to perform any of the Company's obligation in relation to the Goods if the delay or failure was due to any cause beyond the Company's reasonable control.

10 Notices

Any notice required or permitted to be given by either party to the other under these conditions shall be in writing addressed to the other party at its registered office or principal place of business or such other address as may at the relevant time have been notified pursuant to this provision to the party giving the notice.

11 Severance

If any provision of these Conditions is held by any competent authority to be invalid or unenforceable in whole or in part the validity of the other provisions of these Conditions and the remainder of the provision in question shall not be affected thereby.

12 Governing Law

The Contract shall be governed by the Laws of England and Wales.

13 Confidentiality and Intellectual Property

The Buyer shall ensure that, without the Seller's written consent:

(a) Any confidential information of the Seller (including, without limitation, that which relates to the design of the Goods) of which it becomes aware (which information shall at all times remain the property of the Seller) shall not be copied, used, or disclosed and that all materials containing such information shall be returned to the Seller at the end of this contract; and

(b) Any trade names or marks that the Seller uses on or in connection with the Goods are not supplemented by any mark of the Buyer, interfered with or obscured.

14 Installations Carried out by The Company

14.1 It is assumed that all work will be carried out during normal working hours without stoppages. Should our engineers be prevented from working or required to work at weekends, this will incur additional costs. Our costs are prepared on the basis that work is continuous from start to finish of the job unless it is otherwise specified and agreed that the work be carried out in stages. Any return visits required due to other services not being ready, e.g. electrical installation or builders work, will be chargeable.

14.2 All jobs are quoted on the assumption that a natural condensate drain will be possible. Should condensate pumps be found to be required this will be at an additional approximate cost of £150.00 per unit.

14.3 Building work, diamond drilling, making good and access equipment are excluded from this quotation and unless otherwise stated will be the responsibility of others.

14.4 Mains electrical work is not included and is to be carried out by others, unless otherwise stated. However, interconnecting wiring may be done by ourselves.

14.5 When fixing some equipment it will be necessary for our engineers to cut into ceilings or walls blind. In these circumstances we cannot take responsibility for pipes and cables that may be damaged unless a specific plan is provided showing the layout of services.

14.6 Planning or landlords permissions required to site condensers or other equipment are outside of our scope of responsibility and it is assumed that on placing an order these matters have been addressed where necessary. If you require us to assist with planning we are happy to do this on a chargeable basis.

14.7 If this contract should become part of a larger contract it should be noted that no allowance has been made in our quotation price for main contractor discount or retention. Where commissioning is part of the quotation this will be invoiced separately. Awaiting commissioning does not provide any basis for withholding payment other than the amount allocated for commissioning.

14.8 Parking & congestion charges will be charged at cost as an additional item. If free parking is provided then no parking charges will be levied. If you are able to suggest any free or low cost parking that may be suitable please advise the office by fax or letter prior to the commencement of the installation.

14.9 Upon placing an order, if credit is required, please request and complete a credit application form. Please note that it takes approximately seven days to open an account, credit is provided entirely subject to status, in the absence of a satisfactory credit application all sales will be made on a Pro Forma basis.

24/03/16

The Commercial Kitchen Filtration Experts

purified air®
since 1984

Some of our customers

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We are proud to have supplied our equipment into the Aqua Shard and Hutong restaurants in The Shard, the tallest building in the European Union.

About Us And Our Market

Since 1984, Purified Air Limited has been striving to find the best and most cost effective way to filter and control the oil, smoke, grease and odour produced by commercial kitchens.

With the majority of industry brands already using our systems, Purified Air covers the Fast Food, Casual Dining and Fine Dining markets by providing bespoke systems dependant on the type of food cooked, the type of cooking process used and the volume of air being extracted through the exhaust. By working with these variables we are able to design and supply some of the best commercial kitchen exhaust filtration and odour control systems in the world.

In 2004 Netcen was asked to produce a report on behalf of the Department for Environment, Food and Rural Affairs on Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems and in January 2005 the DEFRA Guide was published.

Our Managing Director, David Collins, was consulted extensively during the preparation of the DEFRA guide and was very pleased to be able to assist NETCEN and DEFRA. David has been working in this business since the early 1980's and is a world renowned expert in the field of commercial kitchen exhaust filtration.

Councils up and down the country have powers under the Environmental Protection Act 1990 to ensure that commercial kitchens comply with the DEFRA Guide and that is where Purified Air comes in, ensuring that the extract from commercial kitchens, when finally exhausted, is as clean and odourless as it possibly can be, keeping the kitchens open and their neighbours happy.

Commercial Kitchen Exhaust Filtration

At Purified Air we specialise in the filtration and control of commercial kitchen exhaust systems. To filter and control the exhaust pollution properly you have to understand the two distinct phases:

1. The particulate phase; oil, grease and smoke (carbon) particles.

2. The gaseous phase or odour.

Oil, Grease & Smoke Filtration

To effectively filter the particulate phase we manufacture and distribute a range of Electrostatic Precipitators or ESP's designed specifically for commercial kitchen application. These units utilise an ionisation process to filter particles down to submicron level, with an optimum efficiency of up to 98%.

Odour Control

To efficiently control the gaseous phase we manufacture a range of Ultra Violet Units or Ozone Generators as well as our Odour Neutraliser the ON100. We can also supply passive filtration, including Activated Carbon, Baffle, Mesh, HEPA, Bag and Panel filters.

Dubai Mall - Purified Air provided filtration for the food & beverage outlets

Hutong at the Shard, London

Harrods, London

The Particulate Phase

Our ESP Range

ESP 4500

- **ESP 1500E which can handle up to 0.7m³/sec of air flow**
- **ESP 3000E which can handle up to 1.4m³/sec of air flow**
- **ESP 4500E which can handle up to 2.1m³/sec of air flow**
- **ESP 6000E which can handle up to 2.8m³/sec of air flow**

Our ESP's have been specifically designed for kitchen extract systems; they have integral sumps to collect the oil, grease and smoke particles filtered out of the exhaust. This not only simplifies servicing but eradicates potentially dangerous spillage from the bottom of the units and greatly cuts down on build-ups of grease within the ducting.

The ionisation voltage has been designed to run at a negative potential which enhances the ionisation of particles and also produces more ozone which is helpful in reducing cooking odours.

Our ESP units fit in-line with the kitchen ducting and can be configured modularly to cope with all extract volume requirements.

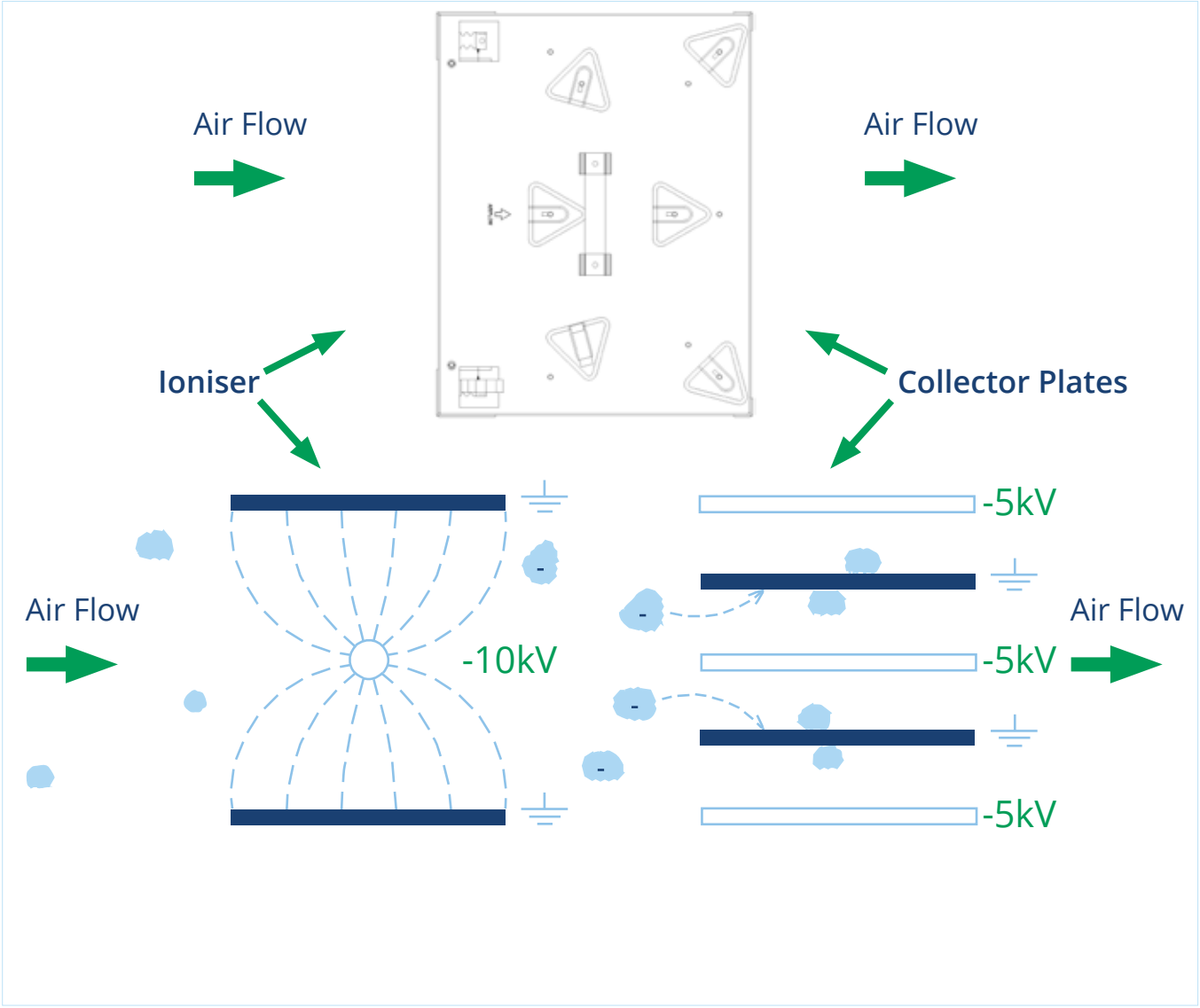
KEY FEATURES

- Eliminates up to 98% of oil, grease and smoke particles
- Filters particles down to sub-micron levels
- Produces Ozone to help reduce malodours
- Designed with an integral sump
- Modular in design
- Specifically designed for commercial kitchen application
- Energy efficient: - uses no more than 50W
- Greatly reduces grease build-up within the duct run

Technical Specification

	ESP 1500E	ESP 3000E	ESP 4500E	ESP 6000E
Electrical Supply	220/240V 50Hz	220/240V 50Hz	220/240V 50Hz	220/240V 50Hz
Power Consumption	20 Watts	30 Watts	40 Watts	50 Watts
Max Air Volume	up to 0.7m³/sec	up to 1.4m³/sec	up to 2.1m³/sec	up to 2.8m³/sec
Dimensions W/H/D	450mm/630mm/ 640mm	900mm/630mm/ 640mm	1350mm/630mm/ 640mm	1800mm/630mm/ 640mm
Weight	55Kg	85Kg	118Kg	153Kg

1. Cooking particulates and odours
2. Canopy Grease Filter
3. ESP - Particulate Control Unit
4. Airflow



The above diagram shows, in a basic visual, how an electrostatic precipitator works. As air passes into the combined ioniser / collector cell, the particulates in the air stream are polarised to a negative potential. As they continue through the ioniser and between the collector cell plates, the polarised particulates are repelled away from the negatively charged plates and attracted to the earthed plates where they stick and so are filtered out of the air flow.

An Autowash option can be provided for our entire ESP range.

The autowash nozzle attachment sits inside our standard ESP units. Once connected to the control / wash station the collection cells can be automatically cleaned at regular frequency. The system is usually factory fitted but can also be retro fitted in existing installations, dependant on the generation of units installed.

Daily cleaning keeps the filters working at their optimum efficiency and will greatly reduce the number of service visits required through the year.

For more information please contact our sales team.

3 ESP Units Stacked in modular formation

4 ESP Units Stacked in modular formation with a double pass

The Gaseous Phase

UV-C Range

Our UV-C (short-wavelength ultraviolet radiation) technology is based on the synergy which occurs when ozone and ultra violet light are combined.

Each individual unit sits directly in the air stream of the kitchen extract duct and can feature from 8 to 24 high output UV-C lamps supplied in modules of 8.

The number of moduals specified will be dependent on the cooking process coupled with the air flow volume which will dictate the amount of ozone needed.

The ozone combined with hydroxyl free radicals, both highly reactive oxidants, act to oxidise odours and grease, permanently destroying and altering the molecular structure of the compounds.

Our UV-C range incorporates:

- **UV-C lamps shielded by their module to reduce the collection of grease on their surface thus extending their optimum efficiency.**
- **The ability to provide the units in simple format or fully monitored with each module of lamps able to provide a local alarm or a BMS signal if in fault.**
- **Exact sizing in line with our ESP range so that they can be bolted together for a uniform modular appearance.**

KEY FEATURES

- High efficiency UV-C technology
- Reduces the need for duct cleaning
- Can reduce cooking odours by up to 90%*
- Designed to complement our ESP system
- UV-C lamps last for up to 14,000 hours

Technical Specification

	UV-C 1500	UV-C 3000	UV-C 4500
Electrical Supply	220/240V 50Hz	220/240V 50Hz	220/240V 50Hz
Power Consumption *	560 Watts	560 to 1120 Watts	1120 to 1680 Watts
Max Air Volume	up to 0.7m³/sec	up to 1.4m³/sec	up to 2.1m³/sec
Dimensions	450 L 630 H 640 W	900 L 630 H 640 W	1350 L 630 H 640 W
Weight	43kg (APPROX)	66Kg (APPROX)	89Kg (APPROX)

**Each rack is 560W (8 lamps)*

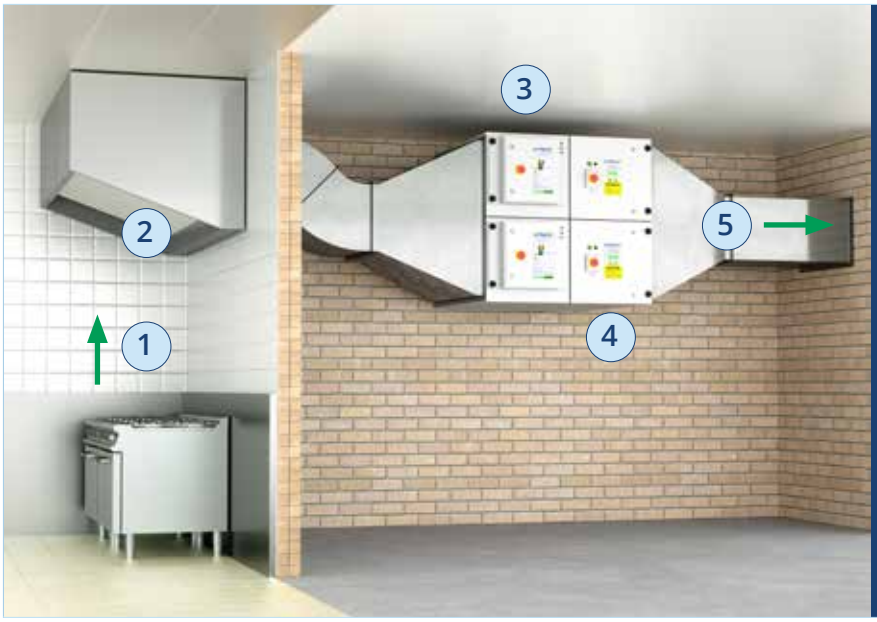
For optimum performance we would recommend between 2 & 6 seconds of dwell time to allow the ozone to work effectively upon the malodorous gasses within the duct.

When installed correctly our UV-C systems can reduce cooking odours by up to 90%*

** With high thresholds of odour, high levels of odour control are only achieved by using good quality particulate control systems (ESP's) as well as supplementary odour control systems.*

This unit's tried and tested UV-C technology allows for the siting of commercial kitchens in locations such as residential areas and shopping centres, where previously planning permission would not have been granted. After extensive research and development Purified Air are able to devise the best combination of lamps at different wave lengths, which when combined with the photo catalytic liner provides the most effective odour control.

Grease, Smoke and Odour



1. Cooking particulates and odours
2. Canopy Grease Filter
3. ESP - Particulate Control Unit
4. UVC - Odour Control Unit
5. Airflow

An urban rooftop scenario with double pass ESP and UV-C units

UV-O Range

Unlike other UV-C systems, our UV-O units are located outside of the kitchen extract duct and are connected via a spigot and spiral ducting.

Our UV-O range includes:-

- **UV-O 500 which handles up to 1 m^3/sec of air flow**
- **UV-O 1000 which handles up to 2 m^3/sec of air flow**

The UV-O 500 has been designed for smaller capacity commercial kitchens.

The UV-O range uses UV-C technology to produce ozone and hydroxyl free radicals to oxidise cooking odours through a process of ozonolysis.

Unlike other UV-C systems, our UV-O units are located outside of the kitchen extract duct and are connected via a spigot and small diameter ducting.

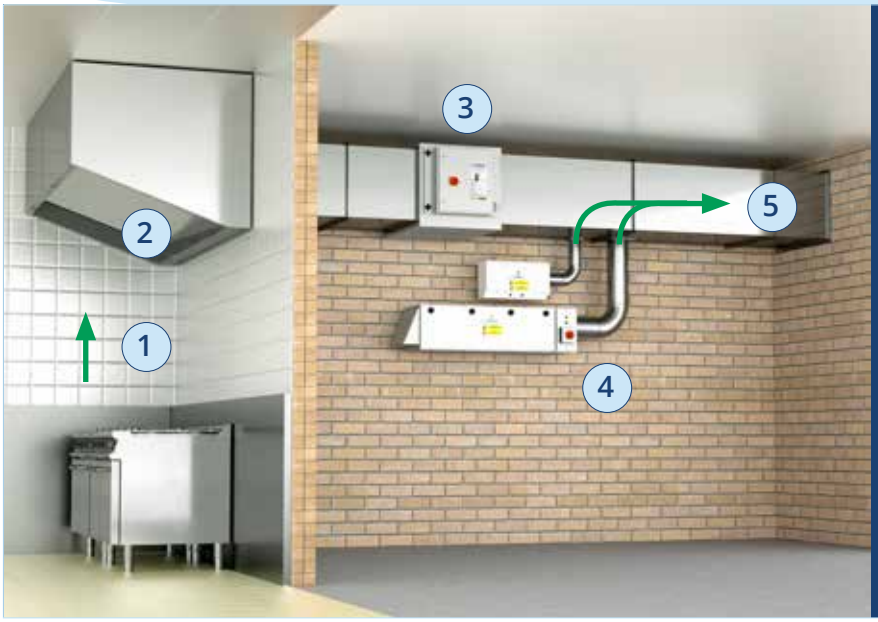
Although it is widely accepted that the best way to apply UV-C light is directly in-line with the air stream itself, performance will be impacted as the lamps become dirty.

With our UV-O units the air flow does not come from the exhaust duct but from the ambient air around the unit, which is filtered on entry. This means that it is able to provide a uniform supply of ozone and hydroxyl free radicals into the extract system with an extremely low pressure loss.

For optimum performance we would recommend between 2 & 6 seconds of dwell time to allow the ozone to work effectively upon the malodorous gasses within the duct.

Key Features

- **Easy to install**
- **Can be retro-fitted into existing duct**
- **Virtually no pressure loss**
- **No monthly maintenance needed**



1. Cooking particulates and odours
2. Canopy Grease Filter
3. ESP - Particulate Control Unit
4. UV-O 500 (above)
   UV-O 1000 (below)
   Odour Control Units
5. Ozone joins airflow

Technical Specification

	UV-O 500	UV-O 1000
Electrical Supply	220/240V 50Hz	220/240V 50Hz
Power Consumption	140 Watts	700 Watts
Max Air Volume	up to 1m³/sec	up to 2m³/sec
Dimensions	W 605mm H 300mm D 200mm	W 1568mm H 350mm D 363mm
Weight	10.5Kg	50Kg

This unit's tried and tested UV-C technology allows for the siting of commercial kitchens in locations such as residential areas and shopping centres, where previously planning permission may not have been granted. After extensive research and development Purified Air are able to devise the best combination of lamps to provide the most effective odour control.

Safety

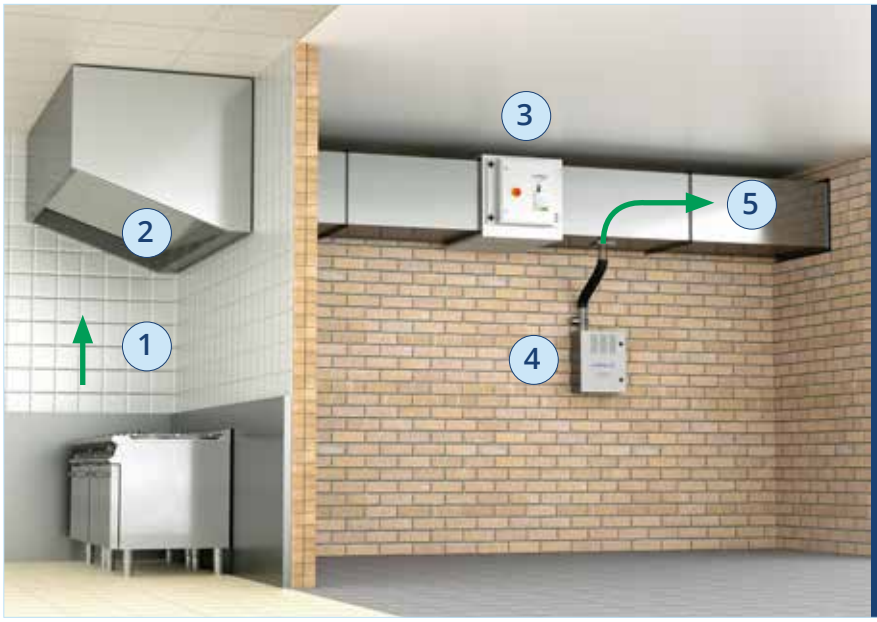
Ultra-Violet band C light is the most powerful of the three bands, it is a very strong oxidant and as such exposure to UV-C light is dangerous. To ensure safety the UV-C lamps are secured behind locked panels and the system has been engineered to shut down automatically when these panels are unlocked. However, since the lamps typically have a minimum life of twelve months and with the system able to operate at optimum efficiency even if one lamp fails it is unlikely that, apart from routine servicing by experienced engineers, that the system will ever need to be opened.

UV-O 500 Unit

UV-O 1000 Unit

ON100

Purified Air use patented technology to scientifically treat cooking odours emitted by commercial kitchen and restaurant exhausts.



1. Cooking particulates and odours
2. Canopy Grease Filter
3. ESP - Particulate Control Unit
4. ON100 Odour Control Unit
5. Eliminodor® joins airflow

Once the airstream in the exhaust duct has had the majority of the particulates removed by one of our ESP units the gaseous phase or malodour can then be treated by the ON 100.

The vapour from a specially blended neutralising agent, ELIMINODOR®, is mixed with ambient air drawn into the ON100 and ionised to a negative potential of 15,000 volts. This ionised vapour then passes along a nonconductive tube to be discharged into the centre of the duct via a venturi spigot, the metal ducting is earthed through the same high tension circuit which makes the contaminant at an opposite potential to the negatively charged ELIMINODOR® vapour. This then causes the negative and positive particles to combine, so treating the malodour by chemical reaction.

Key Features

- **Compact Design**
- **Easy to maintain**
- **Easy to install**
- **No airflow resistance**
- **Energy efficient - uses no more than 40W**

Technical Specification

Electrical Supply	220/240V 50Hz
Max Power Consumption	40 Watts
Ionisation voltage	15kV negative
Max Air Volume	up to 4.16**m³/sec**
Dimensions	W 400mm H 500mm D 200mm
Weight	12.25kg

ON100 Unit

ELIMINODOR®

This product has been specifically developed and blended for use in Purified Air's ON100 unit.

ELIMINODOR® is a finely balanced blend of essential oils and other chemicals which neutralise odorous gases found in the exhausts of commercial kitchens and restaurants.

Purified Air have designed this unique system to ensure that only minimal quantities of ELIMINODOR® are required for optimum results.

Approximate dosage: one litre every 2 - 4 weeks under normal conditions.

Guaranteed Process

Purified Air's ON100 unit in conjunction with ELIMINODOR® can reduce malodour in your commercial kitchen exhaust by up to 90%.

The contamination of ELIMINODOR® with any other ingredients will cause its blend to become unstable and could render ELIMINODOR® completely ineffective, it will also nullify all and any manufacturer's warranty supplied by Purified Air Limited for the ELIMINODOR® and the ON100 unit within which it is used.

Passive Filtration

At Purified Air we supply a range of passive filtration that can be used both in conjunction with our powered units or as standalone filters dependant on the situation.

The filters include:

1. **Carbon Filters**
2. **Absolute (HEPA) Filters**
3. **Bag Filters**
4. **Pleated Panels**

Carbon Filters

We manufacture Sitesafe carbon filters, these innovative carbon units measure 594x196x597mm, three combining to 594x594x597mm, directly replacing our original carbon blocks whilst providing exactly the same filter performance as an existing full size cell.

Their advantage is that they only weigh 18kg each against the 68kg of our original blocks. This takes the strain out of fitting and servicing, allowing only one engineer to complete the task where two had been previously required.

Our Sitesafe carbon filters use panels of activated carbon to remove the malodourous gases within the commercial kitchen extract duct through the process of chemical adsorption. By installing our ESP units before our Sitesafe filters, the carbon life span is greatly increased, allowing it to nullify malodours at optimum efficiency for much longer.

Will require two people plus lifting equipment to carry and install.

Carbon PA242424

Size	594 x 594 x 597
Gross Weight	68.2Kg
Carbon Weight	50Kg
Rated Airflow	3600m³/hr*
Pressure Drop	120Pa

Safe for one person to carry.

No special lifting equipment required.

Sitesafe PA240824

Size	594 x 196 x 597
Gross Weight	17.95Kg
Carbon Weight	16.6Kg
Rated Airflow	1200m³/hr*
Pressure Drop	120Pa

Sitesafe 3 x PA240824

Size	594 x 594 x 597
Gross Weight	53.85Kg
Carbon Weight	50Kg
Rated Airflow	3600m³/hr*
Pressure Drop	120Pa

*Rated Airflow based on a dwell time of 0.1 seconds. Available in all sizes to retrofit carbon cells

Carbon Filter Cell Part Number	Nominal Size (inches)	Height (mm)	Width (mm)	Depth (mm)	Weight of Encased Carbon (Kg)	Weight of Entire Cell (Kg)	Capacity @ 0.1 Second Dwell Time M3/h
PA-240824-7C "Site Safe"	24 x 08 x 24	594	196	597	17	18	1266
PA-242412-7C	24 x 24 x 12	594	594	297	25	36	1900
PA-242424-7C	24 x 24 x 24	594	594	597	50	61	3800

Please find our most popular sizes above, we do supply many different sizes and grades of carbon filters so please contact us with your requirements.

Absolute (HEPA) Filters

To qualify to be called a High-Efficiency Particulate Air or HEPA filter, the filter must be able to remove, from the air that passes through it, 99.97% of particles down to a sub-micron level. Our main use of HEPA filtration is the removal of smoke particles.

We do supply many different sizes and grades of HEPA filters so please contact us with your requirements.

Bag Filters

Our general purpose bag filters are manufactured using a galvanised steel header to retain the pocket sets.

The pockets are produced from synthetic micro-fibres specifically designed for use in air filtration. They can be applied as a pre filter to carbon cells in malodour extraction, taking out oil and grease particles ahead of the carbon filter stage.

Pleated Panels

Our pleated panel filters are constructed using a core of pleated fibrous media designed specifically for use in air filtration. This is then thermally bonded onto a galvanised steel support mesh for maximum rigidity which is then fully bonded into a moisture resistant rigid white lined card frame. These filters are used as stand-alone pre filters or as a pre filter to bag filters filtering oil and grease particles.

Panel Filter Part Number	Nominal Size (inches)	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m3/s
FILTER 023	24 x 24 x 2	594	594	45	0.705
FILTER 024	24 x 24 x 4	594	594	95	0.945

Please find our most popular sizes above, we do supply many different sizes and grades of panel filters so please contact us with your requirements.

With all of our filter range we hold stock of our most commonly requested sizes but of course we can manufacture to order, given sufficient lead times.

Servicing & Maintenance

At Purified Air we pride ourselves on our excellent levels of customer service and maintenance.

Nationwide Coverage

We have hubs in both Manchester and London and can offer nationwide coverage with our teams of directly employed service engineers.

For all Service & Maintenance enquiries please contact us via:

service@purifiedair.com

0800 018 4000

Service & Maintenance Contracts

With every installation we offer the opportunity to sign up for one of our service and maintenance contracts, these are structured to suit individual needs, on a post pay basis with the customer only being invoiced after each service, saving them both time and money against ad hoc servicing requests.

Dependability

So whether you have our commercial kitchen exhaust filtration equipment in your restaurant, café or take away, you can rest assured that we will always be there when you need us.

The DEFRA Guide

When the Environmental Protection Act 1990 was brought in, "an Act to make provision for the improved control of pollution arising from certain industrial and other processes", Councils up and down the country had the power to enforce pollution levels across their boroughs.

In 2004 Netcen, an operating division of AEA Technology Plc was asked to produce a report on behalf of the Department for Environment, Food and Rural Affairs exclusively covering Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems and in January 2005 the DEFRA Guide was published.

Purified Air's Managing Director, David Collins, was consulted extensively during the preparation of the DEFRA guide and was very pleased to be able to assist NETCEN and DEFRA. David has been working in this business since the early 1980's and is a world renowned expert in the field of commercial kitchen exhaust filtration.

DEFRA Guide Risk Assessment for Odour Table 1

Criteria	Score	Score	Details
Dispersion	Very Poor	20	Low level discharge into courtyard or restriction on stack
	Poor	15	Not low level but below eaves, or discharge at below 10m/s
	Moderate	10	Discharging 1m above eaves at 10-15m/s
	Good	5	Discharging 1m above ridge at 15m/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
	Far	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 for medium sized take away
	Small	1	Less than 30 covers or small sized take away
Cooking Type (odour and grease loading)	Very High	10	Pub (high level of fried food), fried chicken, burgers or fish and chips
	High	7	Kebab, Vietnamese, Thai or Indian
	Medium	4	Cantonese, Japanese or Chinese
	Low	1	Most pubs, Italian, French, Pizza or Steakhouse

DEFRA Guide Risk Assessment for Odour Table 2

Impact Risk	Odour Control Requirement	Significance Score*
Low to Medium	Low level odour control	Less than 20
High	High level odour control	20 to 35
Very high	Very high level odour control	more than 35

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

- **Annex B of the DEFRA Guide lays out the information required to support the planning application for a commercial kitchen.**
- **Annex C of the DEFRA Guide outlines risk assessment for odour control for a commercial kitchen.**

To establish what odour control equipment your premises may require, calculate your score from the Risk Assessment for Odour Table 1.

This score can then be applied to the Risk Assessment for Odour Table 2 which will dictate the broad level of control that you require.

These levels are expanded upon in the Risk Assessment for Odour Table 2 Notes.

Specifying the right equipment at the right level is not an exact science and takes years to perfect, our specialist field team are all highly experienced and only too pleased to give you a free site survey.

Risk Assessment for Odour Table 2 Notes

Low to medium level odour control may include:

1. **Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.1 second residence time).**
2. **Fine filtration followed by counteractant/ neutralising system to achieve the same level of control as point 1.**

High level odour control may include:

1. **Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2 – 0.4 second residence time).**
2. **Fine filtration or ESP followed by UV ozone system to achieve the same level of control as point 1.**

Very high level odour control may include:

1. **Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.4 – 0.8 second residence time).**
2. **Fine filtration or ESP followed by carbon filtration and counteractant/neutralising system to achieve the same level of control as point 1.**
3. **Fine filtration or ESP followed by UV ozone system to achieve the same level of control as point 1.**
4. **Fine filtration or ESP followed by wet scrubbing to achieve the same level of control as point 1.**

The above are excerpts from the DEFRA Guide, a full copy of the guide is available upon request

Notes

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FreePhone (UK Only) 0800 018 4000
International +44 1708 755414

Purified Air Limited, Lyon House, Lyon Road, Romford, Essex, RM1 2BG.

www.purifiedair.com | **enq@purifiedair.com**

Ventilation Schedule

Project: **Ambassador Hotel**
Project number:
Nuaire contact: **Phil Austin**
Nuaire contact telephone: **07767 298 257**

Location ref no		KEX-01
General		
Location description		KEX-01
Unit code		SQFA44ES
Unit description		SQF - Squif Single In-line Fans
Quantity		1
Design volume	m^3/s	1.5
External static pressure	Pa	250
Actual volume	m^3/s	2.1
External static pressure	Pa	488.37
Electrical		
Fan input power	kW	0.79
Motor input power	kW	1.03
Motor power	kW	2.2
Motor speed	RPM	1450
Motor Voltage	V	400
Motor phase		3
Motor frequency	Hz	50
Full load current	A	4.6
Starting current	A	4.6
Fan efficiency		48.07%
Specific fan power	W/l/s	0.7
Sound		
Sound pressure level @ 3m	dBA	Induct Inlet: 60 Induct Outlet: 62 Breakout: 53
Sound power level dB re 10^12 W	dB	Induct Inlet: 81, 90, 85, 77, 69, 72, 72, 63 Induct Outlet: 82, 84, 82, 82, 73, 74, 74, 60 Breakout: 77, 81, 77, 73, 60, 61, 57, 39
Other		
Length	mm	820
Width	mm	830
Height	mm	1020
Weight	kg	100
Selected Ancillaries		1 x NAV5 - Anti-vibration mounting kit
Notes		

KEX-02

KEX-02
SQFA44ES
SQF - Squif Single In-line Fans
1
2.5
250
2.61
272.08

1.79
2.26
2.2
1450
400
3
50
4.6
4.6
36.56%
0.9

Induct Inlet: 65
Induct Outlet: 67
Breakout: 57

Induct Inlet: 82, 92, 88, 81, 76, 79, 79, 70
Induct Outlet: 83, 86, 85, 86, 80, 81, 81, 67
Breakout: 78, 83, 80, 77, 67, 68, 64, 46

820
830
1020
100
1 x NAV5 - Anti-vibration mounting kit

SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk
UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497
Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
This data sheet produced on 11 Nov 2019 12:04 using software version 4.2.3109.0

Project Details
Location: KEX-01

Technical Data
SQF - Squif Single In-line Fans

Fan Code:	**SQFA44ES**
Installation Manual Links:	671175
Required duty:	1.5 m³/s at 250 Pa
Actual duty:	2.097 m³/s at 488 Pa
Actual at required flow:	1.5 m³/s at 677 Pa
When speed controlled to required duty (71.54%):	
Fan Input Power:	**0.794 kW**
Motor Input Power:	**1.026 kW**
Specific Fan Power:	**0.7 W/(l/s)**
Velocity at required duty:	2.679 m/s
Fan Total Efficiency:	48%
At full speed:	
Fan Input Power:	2.167 kW
Maximum Fan Input Power:	2.17 kW
Motor Input Power:	2.723 kW
Specific Fan Power:	1.3 W/(l/s)
Nominal Fan Speed:	4 pole, 1,450 RPM
Electrical Supply:	400V 3 Phase 50 Hz
Nominal Motor Rating:	2.2 kW
Motor Current (flc):	4.6 A
Motor Current (sc):	4.6 A
Motor Efficiency:	IE2 / High Efficiency
Max. operating temp:	90°C
Weight:	100 kg

Starting currents are nominal for D.O.L. starting.

Sound Data
Acoustic perfomance to ISO 13347 and AMCA 300.

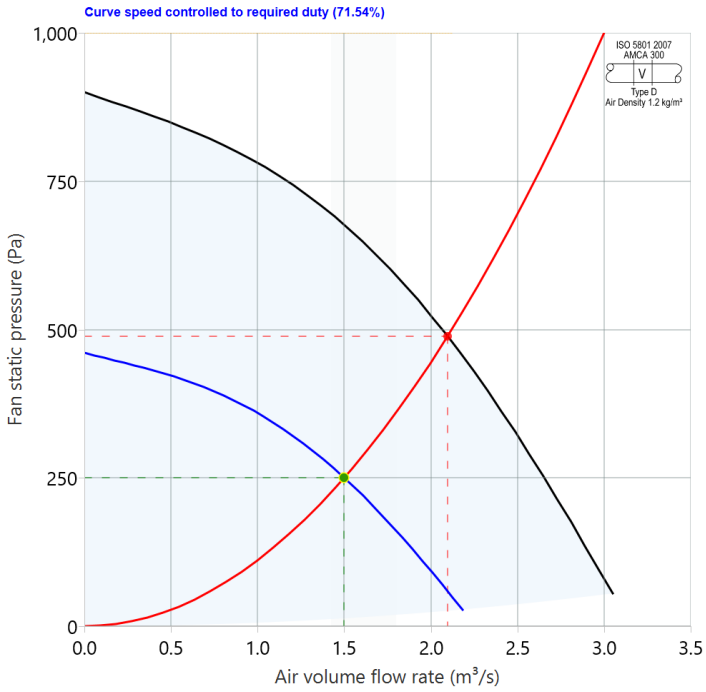
Noise calculated speed controlled to required duty (71.54%)

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	81	90	85	77	69	72	72	63	
Induct Outlet	82	84	82	82	73	74	74	60	
Breakout	77	81	77	73	60	61	57	39	53
For 100% speed:	+2	+3	+4	+5	+8	+8	+8	+8	

dBA is spherical at 3 metres. For hemi-spherical add 3 dBA.
Values shown are for inlet Lw, outlet Lw sound power & breakout levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart


Additional Notes

Selected Ancillaries
1 x NAV5 Anti-vibration mounting kit

Specification
In-line centrifugal fan suitable for both vertical & horizontal mounting. The unit casing shall be heavy gauge galvanised steel. The fans shall be of high efficiency backward curved centrifugal design, manufactured in galvanised steel. Fans shall be direct drive with IE2 high efficiency motors to BS5000 as standard, where appropriate. The unit motor shall be positioned outside the ventilation airflow path. The unit shall be capable of continuous operation at 90°C.
Unit fitted with full Ecosmart controls, BMS interfaces and commissioning controls. Ecosmart fans incorporate (in a convenient separate enclosure) a control package providing full Ecosmart functionality. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

NAV5
Resilient rubber anti-vibration mountings, supplied as a set of 4.

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Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
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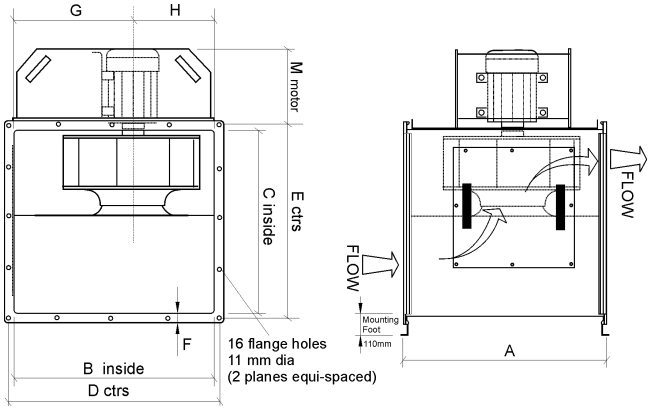
Fan Dimensions



A	B	C	D	E	F	G	H	M
820	800	700	830	730	32	440	360	290

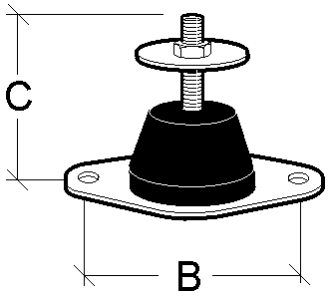
kg
100

Length:	Width:	Height:
820	830	1020

Drawing is for dimensional purposes only. Dimensions in mm

Ancillary Dimensions

NAV5 - Anti-vibration mounting kit
B=45 C=75 mm



SUMMARY FAN DATA SHEET

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UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

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Project Details

Location: KEX-02

Technical Data

SQF - Squif Single In-line Fans

Fan Code:	**SQFA44ES**
Installation Manual Links:	671175
Required duty:	2.5 m³/s at 250 Pa
Actual duty:	2.608 m³/s at 272 Pa
Actual at required flow:	2.5 m³/s at 322 Pa

When speed controlled to required duty (95.85%):

Fan Input Power:	**1.791 kW**
Motor Input Power:	**2.263 kW**
Specific Fan Power:	**0.9 W/(l/s)**
Velocity at required duty:	4.464 m/s
Fan Total Efficiency:	37%

At full speed:

Fan Input Power:	2.034 kW
Maximum Fan Input Power:	2.17 kW
Motor Input Power:	2.561 kW
Specific Fan Power:	1.0 W/(l/s)
Nominal Fan Speed:	4 pole, 1,450 RPM
Electrical Supply:	400V 3 Phase 50 Hz
Nominal Motor Rating:	2.2 kW
Motor Current (flc):	4.6 A
Motor Current (sc):	4.6 A
Motor Efficiency:	IE2 / High Efficiency
Max. operating temp:	90°C
Weight:	100 kg

Starting currents are nominal for D.O.L. starting.

Sound Data

Acoustic perfomance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (95.85%)

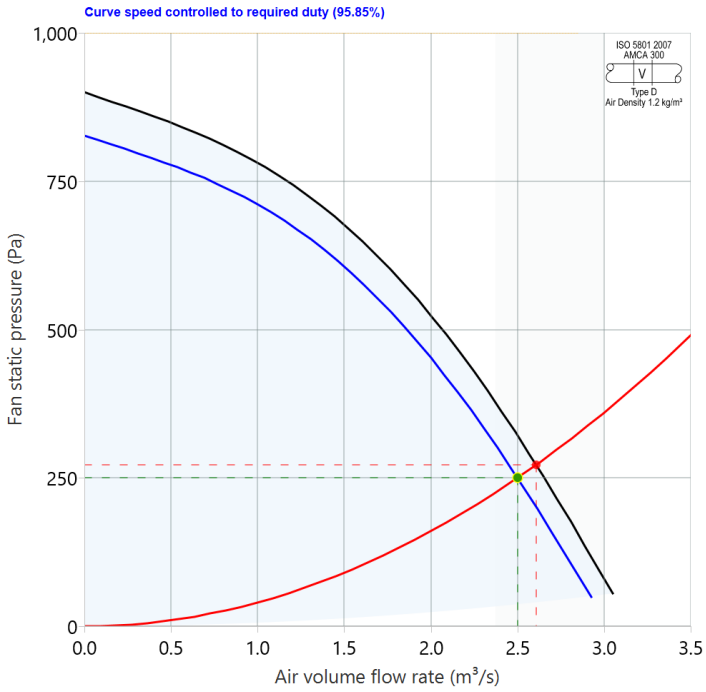
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	82	92	88	81	76	79	79	70	
Induct Outlet	83	86	85	86	80	81	81	67	
Breakout	78	83	80	77	67	68	64	46	57
For 100% speed:	+1	+1	+1	+1	+1	+1	+1	+1	

dBA is spherical at 3 metres. For hemi-spherical add 3 dBA.
Values shown are for inlet Lw, outlet Lw sound power & breakout levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

1 x NAV5 Anti-vibration mounting kit

Specification

In-line centrifugal fan suitable for both vertical & horizontal mounting. The unit casing shall be heavy gauge galvanised steel. The fans shall be of high efficiency backward curved centrifugal design, manufactured in galvanised steel. Fans shall be direct drive with IE2 high efficiency motors to BS5000 as standard, where appropriate. The unit motor shall be positioned outside the ventilation airflow path. The unit shall be capable of continuous operation at 90°C.
Unit fitted with full Ecosmart controls, BMS interfaces and commissioning controls. Ecosmart fans incorporate (in a convenient separate enclosure) a control package providing full Ecosmart functionality. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

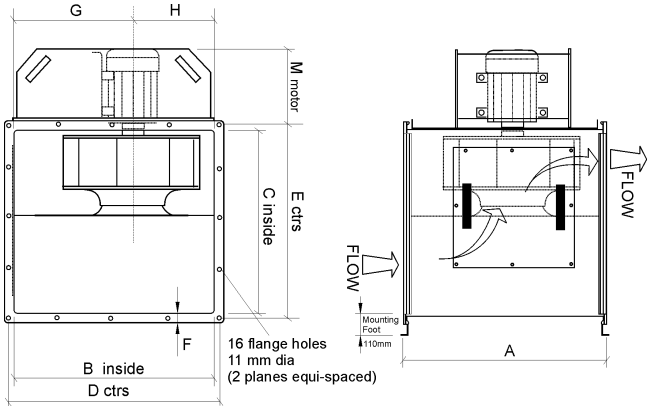
NAV5

Resilient rubber anti-vibration mountings, supplied as a set of 4.

SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk
UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497
Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
This data sheet produced on 11 Nov 2019 12:04 using software version 4.2.3109.0

Fan Dimensions



A	B	C	D	E	F	G	H	M
820	800	700	830	730	32	440	360	290

kg
100

Length:	Width:	Height:
820	830	1020

Drawing is for dimensional purposes only. Dimensions in mm

Ancillary Dimensions

NAV5 - Anti-vibration mounting kit
B=45 C=75 mm