



PERA SOLUTIONS
— LIMITED —

VENTILATION SYSTEM SPECIFICATIONS

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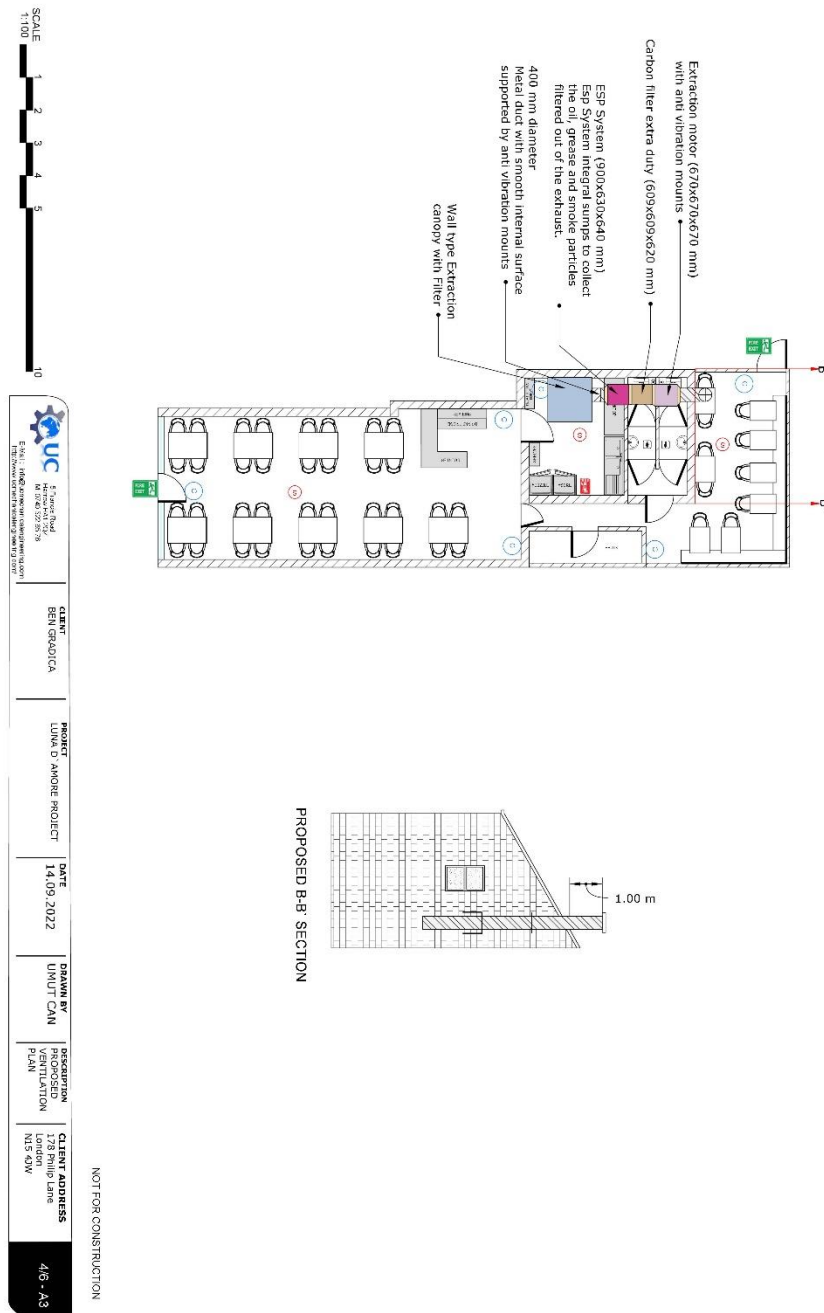
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1. PLAN:

1.1 Proposed Ventilation Plan



2. DETAILS OF THE VENTILATION SYSTEM

The risk assessment suggests that a High level of odour control is needed in order to reduce the risk of odour impact on the nearby receptors therefore the following ventilation system is recommended:

- Canopy with grease filters
- ESP filtration
- Carbon Filter Block(s) with 0.2 second residence time
- Helios Gigabox GBW 400/4 fan
- Duct work to extend 1m above the ridge/roof of the nearest building.

3. FAN SYSTEM

Helios Gigabox GBW 400/4fan will be used for the system. The Gigabox GBW 400/4 comes complete with discharge adaptor and flexible connector. It is single phase (240V) and speed controllable. Helios Gigabox GBW 400/4 is an acoustically lined cubic ventilation box with intake and extract spigots, with flexible connectors to reduce vibration transmission and variable applicable side panels to suit to structural conditions. Simple positioning by standard crane hooks.

Self-supporting frame construction is made from hollow aluminium profiles. Lined with 20 mm thick double-walled side panels made from galvanised sheet steel, sound and thermally insulated with flame-retardant mineral wool. The casing panels can be replaced as required with accessories, such as the external weather louvre and condensate collector. Other accessories, wall bracket and outdoor cover hood.

High efficiency backward centrifugal impeller, manufactured from impact resistant polymers, mounted on galvanised steel support plates, direct driven. The impeller together with the external rotor motor is dynamically balanced to quality standard G 2.5 to DIN ISO 1940 T.1.

Single phase, enclosed, maintenance free external rotor motor with thermal contacts wired to the terminal block, speed controllable by voltage reduction. Low-noise, sealed for life ball bearings. Mains supply via terminal box which is fitted externally on the motor as standard (IP 54).

Specs of Helios Gigabox GBW 400/4:

Voltage - 230V - 50 Hz

Motor Power – 0.53 KW

Max. duty - 4110 m³/h

Motor Speed - 1360 rpm

Full Load Current – 2.40 A

Terminal Box IP Rating - 54

Motor IP Rating - 54

Max. temp. – 50 °C

Sound Pressure Breakout @ 4M - 38db(A)

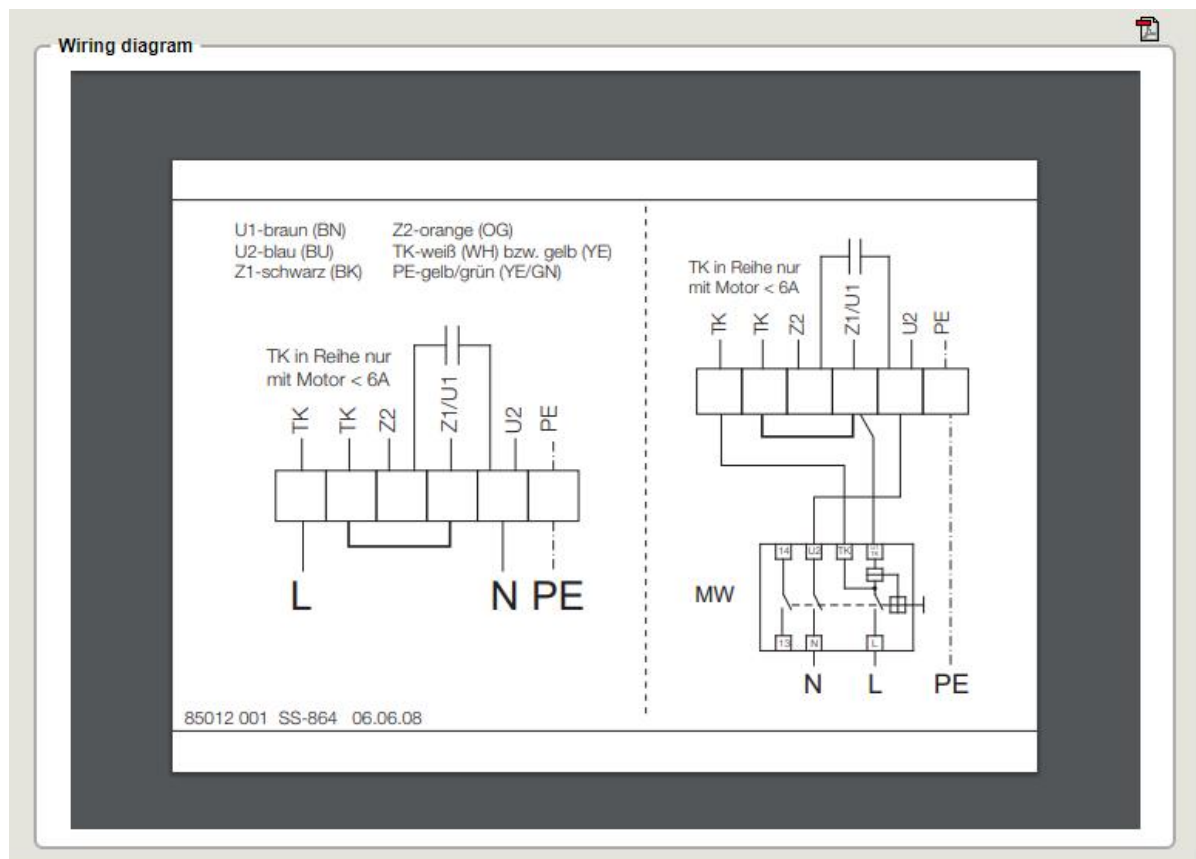
Properties of Helios Gigabox GBW400/4:

Properties										
Ref.no.		5513								
Model		GBW 400/4								
Description		Gigabox with discharge adaptor and flex. sleeve 1 ph., controllable								
Actual pressure		static								
Actual volume										
Max.Vol.		4300 m³/h								
Speed		1360 min-1								
FLC un-controlled		2.40 A								
STC un-controlled		5.76 A								
Airflow output		0.53 kW								
Voltage		230 V / 1 ph / 50 Hz								
Schutzart IP		54								
Max. temp.		50 °C (50 °C if controlled)								
Wiring diagram no.		864								
Weight		52.00 kg								
Delivery time		Ex stock								
Acoustic data:										
Sound in-duct		50 in 4 m								
Case breakout		38 in 4 m								
Spectrum		Hz	Total	125	250	500	1k	2k	4k	8k
Lwa	Intake	dB(A)	70	60	61	63	66	61	56	47
Lwa	Extract	dB(A)	73	58	67	69	65	63	60	53
Lwa	Breakout	dB(A)	58	54	54	49	45	42	37	29

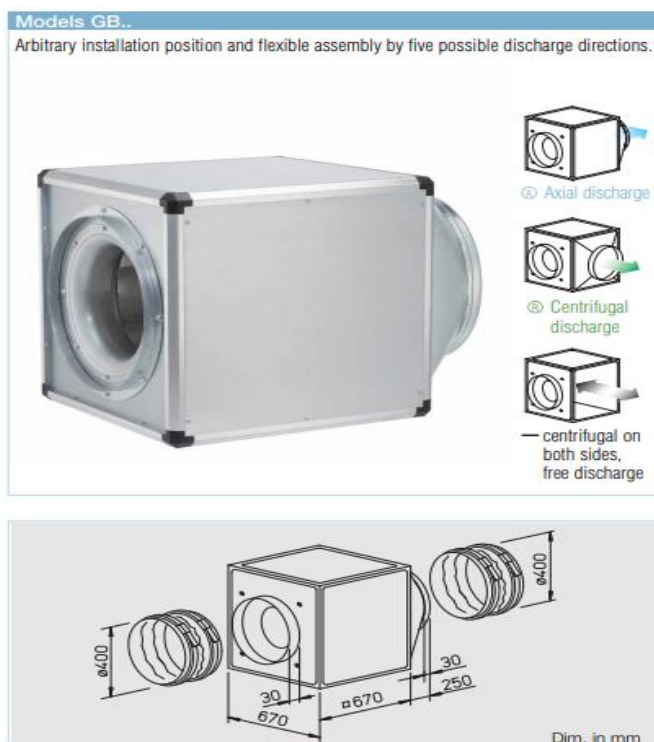
Accessories of Helios Gigabox GBW 400/4:

Accessories					
	Ref.no.	Model	Description	Group	Details
	5644	GB-KW 400/450/500	Condensate collector for Gigabox ND 400, 450, 500	G	
	5626	GB-WK 400/450/500/560/630	Wall bracket for Gigabox ND 400, 450, 500,	G	
	5748	GB-WSD 400/450/500	Outdoor cover hood for Gigabox ND 400, 450, 500	G	
	5639	GB-WSG 400/450/500	External weather louver for Gigabox ND 400,450, 500	G	
	1579	MW	FULL MOTOR PROTECTION UNIT FOR 1 PH MOTORS, 0.4 - 10 A	A	
	1949	MWS 5	5 STEP TRANSFORMER CONTROLLER 1 PH, 230 V, 5.0 A WITH MOTOR PROTECTION UNIT	R	
	1594	RHS 3+1	Isolator switch 3 pole isolator with additional terminal, 400V	A	
	5627	SDD-U	Anti-vibration mounts for installation indoors	G	
	1497	TSW 5,0	5 STEP TRANSFORMER CONTROLLER 1 PH, 230 V, 5.0 A	R	

Wiring diagram of Helios Gigabox GBW 400/4:



Assembly of Helios Gigabox GBW400/4:



■ Special features of types GB T120

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

□ Assembly GB T120

Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

■ Feature

□ Assembly of types GB

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) have to be used. Outdoor installation is possible using outdoor cover

hood and external weather louvers (accessories).

■ Specification of both types

□ Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

□ Impeller

Smooth running backward curved aluminium centrifugal impeller highly efficient and direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

□ Motor

Maintenance-free external rotor motor or IEC-standard motor protected to IP 54. With ball bearings and interference-free as standard.

□ Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB T120 fitted on the motor support plate.

4. CARBON FILTRATION

The below activated Carbon filter system will be used.

Activated carbon type : AKOLIT-A3

Activated carbon cartridge : 708

CKG holding frame : CKG-6-V-708-03

Please find the details of Akolit-A3

Grain size	Weight [kg/bag]	Density [g/l]	Special treatment	Application for example	Minimum contact time	Order number
AKOLIT-A1	25	490	no	Odours Hydrocarbons Solvents	0.1-0.2 s	00 01 294
AKOLIT-A2	25	490	no		0.1-0.2 s	00 01 581
AKOLIT-A3	25	460	no		0.1-0.2 s	00 01 793
AKOLIT-C1	25	640	yes	Sulphuric acid Hydrochloric acid Sulphur dioxide Hydrogen fluoride	0.2 s	00 03 572
AKOLIT-CG1	25	560	yes	Radioactive gas types (methyl iodide)	0.25 s	20 02 410
AKOLIT- CG1,5	8.0	520	yes		0.25 s	20 01 606
AKOLIT-D	25	460	yes	Sulfate, propylene Hydrogen sulphide	0.4 s	On request
AKOLIT-E	25	460	yes	Ammonia, amine	1.0	On request

Grain size

1=Rods with diameter 1 mm

2=Rods with diameter 2 mm

3=Rods with diameter 3 mm

Please find the details of Activated Carbon Filter 708/709

**Activated Carbon Filter
Activated Carbon Cartridges 708/709**

DELBAG® Air Filtration



Activated Carbon Cartridges 708/709

consist of concentric perforated cylinders steel sheet or stainless steel or synthetics. The carbon content of the steel sheet cartridges can be replaced, connection is performed via 3-point bayonet.

Application:

Adsorption of odors, toxic gaseous pollutants, hydrocarbons and solvents.

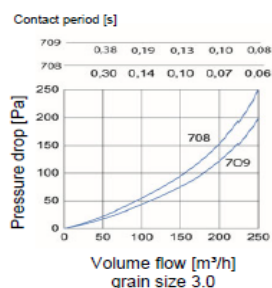
Special features:

Different activated carbon types; regeneration is possible.

Areas of application:

CKG holding frame

Pressure drop diagram



Please find the details of CKG holding frame

DELBAG® Air Filtration

**Activated Carbon Filter
CKG Holding Frame**



CKG holding frame

individual, exchangeable activated carbon bayonet-fitted type 708/709 & 708-K/709-K cartridges are used in frames made of galvanized or stainless steel.

Special features:

The cartridges can be individually replaced and have a 3-point bayonet-type connection.

Areas of application:

Frames are used in duct air filters EBE (CKG-E) with 472 + 620 mm installation depth (on request), or as wall frames.

CKG holding frame	CKG-2-V-708-03	CKG-3-V-708-03	CKG-6-V-708-03
Unit size [mm]	304/304/70	304/609/70	609/609/70 *
Number of cartridges [quantity]	4	8	16
Activated carbon	16	32	64

5. ESP FILTRATION

For ESP filtration model ESP 3000 will be used.

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 specs of ESP 3000

ESP 3000

Max Air Volume	up to 1.4m ³ /sec
Dimensions	W900mm H630mm D640mm
Weight	85KG
Power	30W

6. INSTALLATION AND OPERATING INSTRUCTION OF FAN

6.1 Important information

To ensure safety and correct operation please read and observe the following instructions carefully before proceeding. The electrical connection must be fully isolated from the supply up to the final assembly! Keep the installation and operating instructions as a reference at the device. After the final assembly the document must be handed out to the operator (tenant/ owner).

6.2 Warning and safety instructions

Accompanying symbol is a safety-relevant prominent warning label. All safety regulations and/or symbols must be absolutely adhered to, so that any danger situation is avoided.

6.3 Warranty – Exclusion of liability

If the preceding instructions are not observed all warranty claims and accommodation treatment are excluded. This also applies to any liability claims extended to the manufacturer.

The use of accessories not offered or recommended by Helios is not permitted. Potential damages are not liable for warranty.

6.4 Certificates

If the product is installed correctly and used to its intended purpose, it conforms to all applicable European Standards at its date of manufacture.

6.5 Receipt

Please check delivery immediately on receipt for accuracy and damage. If damaged, please notify carrier immediately. In case of delayed notification, any possible claim may be void.

6.6 Storage

When storing for a prolonged time the following steps are to be taken to avoid damaging influences: Protection of motor by dry, air- dustproof packing (plastic bags with drying agent and moisture indicators). The storage place must be water proof, vibration-free and free of temperature variations.

When storing for several years or non-rotation of motor an inspection of the bearings with possible relubrication and an electrical inspection to VDE 0701 and VDE 0530 are absolutely necessary before

starting operation. When transshipping (especially over longer distances) check if the packing is adequate for method and manner of transportation.

Damages due to improper transportation, storage or putting into operation are not liable for warranty.

6.7 Einsatzbereich

The GigaBox GB.. T120 are designed for moving polluted, humid and hot air volumes up to max. 120° C. The motor is located outside the main air flow. The units find primarily their application in commercial kitchens and in the process technology. By changing the side panels, a variable discharge direction and an optimal adaptation to structural conditions is achieved.

For operation under difficult conditions further inquiry and operation release is necessary as the standard execution might not be suitable. Outdoor use is possible with outdoor cover hood and external weather louvre (one or two-sided, accessories). A drilling for the rain drainage (accessories) is prepared. The insulation class, the IP rating and the maximum air flow temperature (at normal operation -TR and using speed regulation) are given on the fan name plate. The fan is limited for continuous operation S1 and frequent switching operations are not allowed. The fan may only be used for its intended purpose.

Use and operation only according to this installation and operating instructions. Using the fan to move heavily polluted air or in potential hazardous areas is not allowed!

The fan may only be used for its intended purpose.

6.8 Operation as room ventilation device

In order to achieve the desired fan performance (ambient temperatures of -40° to +40°C) a systematic air supply is essential.

6.9 Performance data

The unit must be installed correctly to achieve the optimum performance. This applies to the installation of the unit, the ducting and the replacement air supply.

6.10 Electrical parameters

The motor rating plate provides information on the electrical data. These data are to be examined for its conformity to the local conditions.

6.11 Acoustics

The Gigabox casing is acoustically insulated. Adverse operating conditions etc. can lead to an increase of the given data.

6.12 Impellers

The GigaBox fans have backwards curved centrifugal impellers made from aluminium with galvanised steel support plates. The impeller and the motor as one unity are dynamically balanced to quality standard G 6.3 or 2.5 – DIN ISO 1940 T.1.

6.13 Sound level

The sound levels stated in the catalogue can differ considerably after installation as the sound pressure level depends on the absorption capacity of the room, the place of installation and other factors. Sound reduction is possible by using sound attenuators and by speed regulation.

6.14 Safety

A certified electrician may only carry out all servicing and installations.

The fans may be operated only with the rated voltage indicated on the type plate.

Technical data on type plate are to be adhered to without fail.

The degree of protection given on the type plate is only valid with designed installation in accordance with these installation and operating instructions and with closed aggregate.

6.15 Electrical connection

All work must be carried out with the equipment fully isolated from the power supply. The electrical connection is to be carried out in accordance with the relevant wiring diagram and is only to be done by a certified electrician. The electrical connection must be fully isolated from the supply up to the final assembly!

All relevant safety regulation, national standards and norms are to be adhered to. An appliance is required for cut off from the supply with a minimum of 3 mm contact opening of each pole. The rated voltage and frequency must correspond with the data on the type plate. The standard terminal box is located on the motor support plate.

6.16 Protection against accidental contact

When installing observe the valid regulations for labour protection and accident prevention. Any contact with rotating parts must be avoided. Make sure that no textiles (such as curtains) or other materials, which could be sucked in, as for instance clothing, are close to the suction area of the fan.

Depending on the installation conditions a contact safety device on the discharge side may be necessary. Corresponding grilles are available as accessories. Fans protected by their installation in ventilation channels or closed aggregates do not need a protection grille, if the installation guarantees the protection (see DIN 31001 and 24167). We emphasize that the installer will be held responsible for accidents occurring as a result of missing protection devices.

6.17 Air flow direction and direction of rotation

The Gigabox T120 model ranges have a fixed direction of rotation, i.e. they are not reversible. An arrow on the units indicates the direction. Correct rotation must be ensured when running the fan. Incorrect direction of rotation leads to lower air volumes, increased noise levels and a higher electrical current, which will harm the motor.

The fan should be installed in such a way to ensure desired air flow direction in the system.

The air flow direction of the fans can be determined by appropriate installation (see operation/use above). The discharge is possible in any direction by changing the discharge adapter and side panels to suit to desired result. Therefore most desired discharge options are available.

6.18 Speed control

All units (except GB 630/4 T120, GB 710/4 T120) are speed controllable via a 5-step transformer controller (accessories). The 3 phase units can also be operated via star-delta connection giving 2 speed steps (accessories - 2 speed switch DS 2 or motor protection unit M 4).

3-phase units are controllable with Helios frequency inverters (accessories). For safe operation a sinus filter on all phases must be installed between motor and inverter. When speed controlled, the maximum air flow temperature stated for speed-controlled fans (TR) must not be exceeded. The suitable performance curves and controllers can be found on the equivalent catalogue page(s).

The use of the other brands, especially other electronic devices, can lead to malfunctioning and even failure of controller and/or fan. Controllers, which have not been cleared by Helios, are not liable for warranty and guarantee claims.

6.19 Motor protection

All Gigabox T120 units are equipped with maintenance-free motors with build-in thermal contacts, suitable for continuous operation S1, insulation class F. All units should be connected to a suitable motor protection device (accessories, see catalogue). Only through this an approved motor protection is achieved.

7. MAINTENANCE

Proprietors of commercial kitchens have a duty to ensure that the ventilation system serving the respective premises are maintained and operated effectively. Good maintenance is a prerequisite for ensuring that a system complies with Best Practicable Means under statutory nuisance provision and will form a key element of any scheme designed to minimise harm to the amenity under planning regulation. Good maintenance is required by the food hygiene regulations and will also minimise the risk of fire. The recommended cleaning period for extract ductwork is:

Heavy Use	12-16 Hours Per Day	3 Monthly
Moderate Use	6-12 Hours Per Day	6 Monthly
Light Use	2-6 Hours Per Day	Annually

Recommendations for maintenance of odour control system include:
 Change carbon filters every 4 to 6 months

The recommended cleaning period of ESP system is:

Action	Every 1 week to 4 months (depending on the degree of pollution)	Every 6 months	Every 12 months
Clean the outside of the product with mild detergent		X [1]	
Check the door sealing material			X[1]
Clean the inside of the product and remove dust/grease from the filter compartment	X[1]		
Clean the prefilter, ioniser, collector and the final filter and check for damages	X[1]		