

# KITCHEN EXHAUST VENTILATION SYSTEM

Protecting your kitchen exhaust system from  
nuisance odours, smoke and gases



# WHY CHOOSE CAMFIL FOR YOUR CLEAN AIR REQUIREMENTS

Camfil is a world leader in clean air technology and air filter production. Our organization is a specialist in the field of air filtration solutions. We are focused on research and development, state-of-the-art manufacturing, we don't just market them, we supply solutions of air filtration products solutions and services on a global basis.

The Camfil group of companies are the world's largest designer and manufacturer of air filters and associated products including fume, dust and solvent extraction and abatement solutions with currently 33 manufacturing facilities and plans to invest in more production units around the globe as our customer base continues to grow. Camfil takes great pride in the fact that our products are of the highest quality, offering our customers air filters with the longest life,

and lowest operating and maintenance costs. For the past 55+ years we have been a leading supplier of air filtration solutions and services to facilities using clean air to create cleanrooms and protect people and/or products and all indoor areas requiring good indoor air quality. Many of our clients have multiple facilities located around the world. Camfil is viewed by many of the largest industrial manufacturers as a partner as we are well positioned to support their air filtration demands on a local and global basis. **Major investments have been made in our R&D departments located around the world to develop products specifically for the clean process industry.** It is common for us to 'partner' with our customers and their consultants or contractors to meet and often exceed their most demanding air filtration requirements.

Often systems are poorly maintained causing them to fail. Regular maintenance is a requirement, so we should ensure that there is a maintenance program arranged that is suitable for the kitchen exhaust system used. Trained Camfil staff are familiar with the interpretation of these standards and guidelines, so can be a valuable resource to you during the consulting and design stages of a commercial kitchen project.

# CAMFIL AROUND THE WORLD



# FOOD SAFETY COMPLIANCE IS OUR CONCERN

## The challenges of restaurant ventilation and air quality management

A busy commercial kitchen has a quite different requirements than the “front of house” dining area, which requires a more comfortable, quite ambience. In the kitchen, a high rate restaurant ventilation system is used to remove heat from cooking processes and collect smoke, steam and oil mist. The air is typically dumped into atmosphere. Moving such contaminated air through buildings and discharging to the atmosphere attracts various risks, including:



Smell



Poor Duct Hygiene



Fire



Pest Infestation

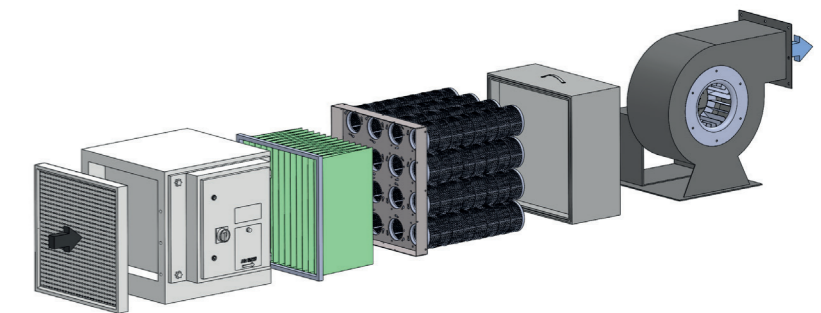
Put clean indoor air on the menu at your restaurant and minimize fire risk, eliminate odour nuisance and complaints, and increase customer loyalty by providing fresh, clean air. Today, more and more people are going out to eat. They're also rating their overall customer experience down to the most minute details. This increased traffic can bring in more profit, but also kitchen hazards. That's why restaurants of all types need careful air management.

## Proper restaurant ventilation: good for health, good for business

Commercial kitchens are highly ventilated to remove heat, smoke and steam. Careful treatment of the exhaust and supply air is essential to minimize fire risk, eliminate odour nuisance and provide paying guests with good air quality. To mitigate the risk, best solution is an appropriate combination of air filtration that coalesces oil and grease, collects fine particles and finally removes the gases responsible for odour. Loading of oil, grease, particulates and odour can be quite high in kitchen exhaust applications. After a successful installation, specified maintenance procedures must be followed to ensure on going effectiveness.

## Ecology Unit

- Metal filter (particulate load reduction)
- Electrostatic precipitator (grease collection)
- Bag filters (particulate collection)
- Activated carbon filters (odour control)
- HEPA filters (high efficiency filter, optional)
- Exhaust fan including control system/panels.



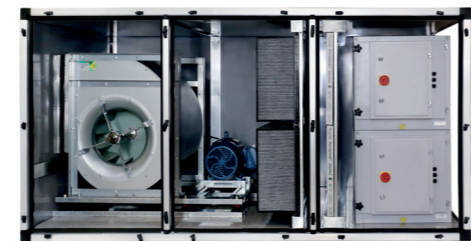


# FUNCTIONALITY OF ECOLOGY UNIT

The primary function of the Ecology Unit is to effectively filter particulate phase, oil, smoke, grease, odor of extracted kitchen fumes. Achieving this can only be done by using effective multistage filtration solutions. Camfil Ecology Unit provides unique filtration options to select and design depending on site needs.

## Housing details:

The Camfil's Ecology housing are a multi-staged, combination filtration system designed and tailored to control kitchen exhaust emissions of all types of cooking from light to heavy duty kitchen applications. Housing are constructed from double skin insulated panel available in standard one-piece factory construction.



## Features:

- Flexible system design with engineering support
- Double skin panel with high density of rockwool with maximum sound insulation
- Pre coated panel with polyester paint as standard
- Hinged type access door, with optional removable type
- Integrated centrifugal fans and electrostatic precipitator
- Optional split module construction
- Optional additional weather proof coating
- Standard heavy duty base mount skit with lighting lugs.

Model	Airflow (CFM)	External Dimension (mm)			Fan Type	Fan kW Rating	Unit Weight (kg)
		Width (W)	Height (H)	Length (L)			
EU-1000	1000	800	800	3500	EC	1.2	500
EU-2000	2000	1150	800	3700	EC	1.9	650
EU-4000	4000	1650	800	3800	EC	5.25	900
EU-6000	6000	2050	1050	4000	EC	5.7	1150
EU-8000	8000	1650	1450	4000	DWDI	7.5	1400
EU-10000	10000	2050	1450	4000	DWDI	11	1800

Pressure Drop at Maximum Airflow	Pa
Ecology's Clean Initial/clean	460
Ecology's Clean Final/dirty	850
External static pressure for other systems	300

## Note:

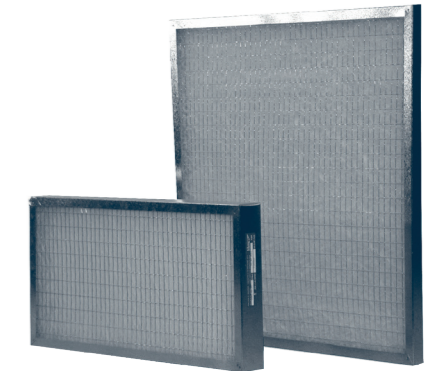
- For effective performance, it's not recommended to exceed the maximum flow rate
- Allow 1000mm on access door side for servicing
- Temperature of the exhaust at the Unit must be below 50 degrees for performance as advertised
- Inlet transitions and/or ductwork before the unit must be straight for a length equal to the largest of the Ecology Units height or width for performance as advertised
- Configuration uses F7 Hi-Flo Bag filter (ISO ePM1 60%) and contact time of carbon filters is 0.09 seconds.

## CamMet metal filter 8AL:

The colaser metal filters are the first stage of filters in the Ecology Unit that filters out the maximum oil and grease from the incoming air stream which in turn reduces the load on ESP. These are made from aluminum knitted wires mesh media formed into 8 layers for maximum efficiency.

## Features:

- Prefilter suitable for cleanable dust, sand, flour, paint and oil
- Grease and oil filter with very high separation efficiency
- Customized size and material
- ISO16890:2017 coarse 50% efficiency (EN779:2012 G2 ; ASHRAE MERV 7)
- Maximum temperature: 70°C and 70% RH.



## Electrostatic precipitator (ESP)

The second stage of filtration are the ESPs that works on the ionization principle to filter particulates in the exhaust down to a sub-micron level, with an efficiency of up to 98%. The ESP filters have been exclusively designed for filtering extracted kitchen fumes and have integral sumps built in to collect the oil and grease particles.

## Features:

- A high degree of efficiency, with power consumption between 20 Watts and 50 Watts, depending on the model.
- All internal components are designed for easy removal
- The Collector Cells can be fitted with ionization wires or with stainless steel spiked ionizer blades.
- Fully welded sumps prevent leakage of collected grease. The inward sloping edges of the sumps encourage the flow of grease away from both the ducting and either side of the unit
- UL 867 rated ESP model
- Dual Pass ESP System
- Auto Wash ESP with user friendly programmable logic control (PLC).

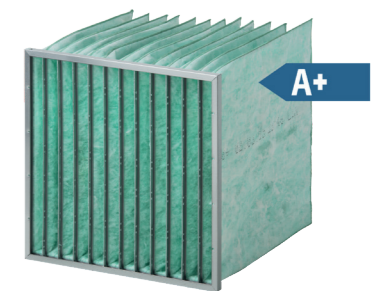


## Fine filter (Bag filter)

The third stage are the fine filters for removing the particulate matters especially the smoke and fumes. These are high efficient bag filters made from glass fiber media designed to have minimum resistance due to the tapered bag design. Because of the high dust holding capacity these filters last long and performs efficiently though out its life cycle without efficiency deterioration.

## Features:

- Low initial pressure drop
- Eurovent Certified Energy Class A+
- Comprehensive range of standard sizes
- Innovative pocket design for optimum air distribution
- Conical pockets
- Robust metal header frame
- ISO16890:2017 ePM1 60% minimum efficiency.

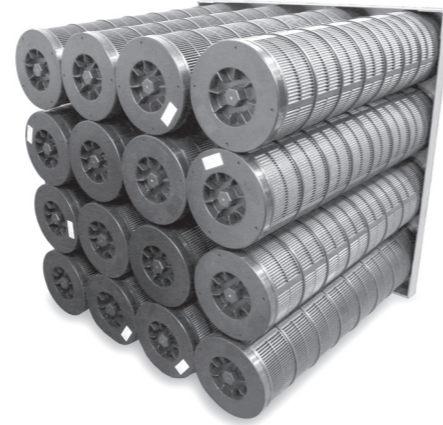


### Carbon filter (CamCarb CG):

Loose filled carbon filters are in the line provided to filter kitchen odour and smell. High efficient activated carbon medias are filled in the 600 mm long cassettes to achieve maximum contact time and reduce the resistance at rated airflow. The cassettes are fixed on a permeant frame and designed for zero leakage installation. These cassettes are further designed with scrims to filter the gradual dusting of carbon media.

#### Features:

- Leak-free installation ensures maximum possible efficiency
- 360 degree geometry and even air distribution ensures maximum possible lifetime
- Lowest possible Life Cycle Cost (LCC)
- May be filled with a wide range of molecular filtration medias
- Rapid bayonet fitting system and integral dual TPE gaskets
- Totally corrosion resistant
- Reduced weight compared to metal version
- Modular and flexible assembly.



### HEPA filters (Absolute VG)

HEPA filters are the final and optional stage in the Ecology Unit provided to have the very best out put from the Ecology Unit. The HEPA filter ensures the air filtered are at an efficiency of 99.95% down to 0.1-0.2 particle size. HEPA filters are V-Bank type to accommodate large airflow at very minimum pressure drop. Each HEPA filters are individually scan tested and rated as per EN 1822:2009.

#### Features:

- For very high airflows (up to 3,7 m/s)
- 23% energy savings compared to market average
- Lowest weight in the industry
- Strong and airtight frame
- Prosafe certified
- Hygienic product acc. to VDI 6022 and ISO846
- Tested for food safety acc. to EC 1935:2004
- Free of BPA, formaldehyde and phthalates
- Tested resistance against disinfectant and cleaning agents
- Compact, lightweight and fully incinerable for optimized waste management
- Optimized for bag-in bag-out safe changes
- 100% leak-free: individually scan tested.

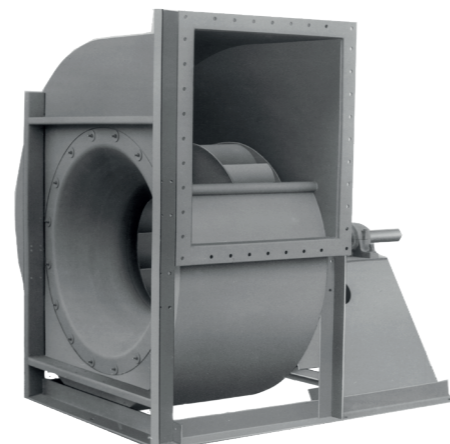


### Extract fan

The Extract fans re DIDW/SISW fans direct or belt driven to ensure effective air extraction through filtration system backed curved blade centrifugal fans are used. This Extract fans has been designed to maintain match the Camfil's Ecology Unit and ensure the system delivers continues optimal performance with ensuring constant airflow volume via a pressure sensor and VFD.

#### Features:

- Available in EC/SISW/DIDW design fans
- AMCA rated and UL rated
- Auto/Manual fan speed control
- Integrated VFD and PLC option
- 400°C rated fans.



### Control panel:

User friendly IP 65 rated control panels are provided along with the Ecology Unit for monitoring the proper working of the system. Below status can be monitored in the control panel.

#### Features:

- Filter status (clean/blocked)
- Speed control for the fan
- Running HRS display for the fan
- Motorized damper open/close status
- Fan operating load (amps)
- BMS interfacing option
- Fire alarm interfacing to FACP.



### New data:

The Ecology Unit's has 3 inbuilt pressure differential sensors designed to monitor the pressure drop increase over the pre-filter, bag-filter and final filter. Once the pressure drops over the respective filters have reached a prescribed limit, replacement of the filters is recommended. The standard control option is magnehelic pressure gauges, requiring no additional onsite work or power, however inspection is only local. Alternatively, 50-500Pa pressure transmitters are available as an option. These 3 pressure transmitters have a local display, and are pre-wired to a junction box located on top of the Ecology Unit to allow easy connection to an existing building management system or remote display.



### Camfil guarantee:

At Camfil our global reach ensures that we are aware of all global and local standards for clean air. Our systems are designed to comply with the most relevant regulations around kitchen exhaust systems. Our air filters are all tested and certified to local and international test standards to ensure optimal filtration efficiency and performance of our units within your commercial kitchen.



## Camfil – a global leader in air filters and clean air solutions

For more than half a century, Camfil has been helping people breathe cleaner air. As a leading manufacturer of premium clean air solutions, we provide commercial and industrial systems for air filtration and air pollution control that improve worker and equipment productivity, minimize energy use and benefit human health and the environment.

We firmly believe that the best solutions for our customers are the best solutions for our planet, too. That's why every step of the way – from design to delivery and across the product life cycle – we consider the impact of what we do on people and on the world around us. Through a fresh approach to problem-solving, innovative design, precise process control and a strong customer focus we aim to conserve more, use less and find better ways – so we can all breathe easier.

The Camfil Group is headquartered in Stockholm, Sweden and has 33 manufacturing sites, six R&D centres, local sales offices in 30 countries and 4,800 employees and growing. We proudly serve and support customers in a wide variety of industries and in communities across the world. To discover how Camfil can help you to protect people, processes and the environment.

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For further information please contact your nearest Camfil office.