



## food processing industry

Camfil Farr	Application brochure	
Food processing industry		
Camfil Farr – clean air solutions		

## human health

### Microscopic causes ...

Outdoor air carries 200 to 1500 bacteria per m<sup>3</sup>. An air-conditioning system with a capacity of 10,000 m<sup>3</sup>/h therefore takes in 2 to 15 million bacteria each hour!

Fungal spores: 1 to 10 mm

Bacteria: 0.2 to 10 mm

Viruses: 1/100 to 1/1000 of micron

Visible range: Hair 100 mm and pollen 10 mm



### ... Catastrophic effect

- Loss of production
- Withdrawals from sale, returns and destruction
- Interruptions to production, plant closures
- Extra expenditure on controls and remedial action
- Drop in sales
- Damage to brand image
- Loss of consumer confidence

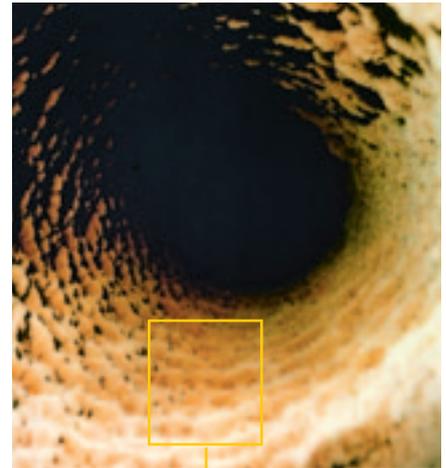
### Food hygiene and safety

Protecting human health is a major concern for the governments of the European Community (Directive 89/397/EEC of 14 June 1989).

In France, for instance, whenever public health is threatened by a serious danger, the National Agency for Food Health and Safety (AFSSAL) can recommend to the authorities that the requisite health-policy measures be taken (Law No. 98-535 of 1st July 1998). Such measures may include the withdrawal and destruction of foodstuffs, or even the closure of all or part of the offending company for an appropriate period.

*In order to ensure the safety of foodstuffs, those in charge of establishments are required to:*

- identify every aspect of their business that impacts on food safety;
- ensure that appropriate safety procedures are put in place, implemented, adhered to and updated, on the basis of the principles in the ADPCM/HACCP (Hazard Analysis Critical Control Point) system of risk analysis and analysis of critical points for their control.



### For preventing the air-conditioning system from becoming a "microbes' nest"

Temperature, humidity and accumulated organic matter: clogged exchangers provide good support for the development of micro-organisms.

## Air filtration solutions designed for the food processing industry

*In both design and construction, Camfil Farr integrate the characteristics specific to the food processing industry:*

### COMBATTING MICROBIOLOGICAL CONTAMINATION

- Cleanability
- Decontaminability

### RESISTANCE TO CORROSION

- Use of stainless-steel materials, plastics, polyester resin... Constraints of HACCP procedure
- Solution consistent with HACCP (Hazard Analysis Critical Control Point) risk level
- Traceability, identification and labelling of filters
- Guaranteed efficiency in accordance with current Standards

### RAPID DEVELOPMENT OF PROCESSES AND PRODUCTION

- Modularity, flexibility and progressive nature of filtration solutions
- Easy and safe to use

### QUICK AND EFFICIENT MAINTENANCE

- Accessibility
- Simple fitting of filters

### ACCESSIBILITY FOR IN-SITU TESTING FOOD INDUSTRY TAYLOR-MADE

**Our range of product dedicated to food industry is developed in accordance to its requirements. For some components close the process, Camfil Farr is able to provide "food certification".**

# inert area



INERT AREA

**Definition**

An area in which the risk of biocotamination of the product is average or low to negligible, according to Standard ISO/DIS 14698-1.

**Examples of applications**

- Reception areas / low-temperature storage of raw materials (areas of “non-movement”).
- Areas for packaging, cartoning and storage of pre-packed products.
- Air-conditioned workrooms...

**Air quality**

“ventilation and air-conditioning systems must not be a source of food contamination” (Order dated 9 May 1995, Art. 3).

Only fine filtration, with a minimum efficiency of F7 according to European Standard EN 779:2002 and EN 13053, can ensure adequate protection (UNICLIMA Air-conditioning and Health Guide; EUROVENT Recommendation 12/1-92; VDI Standard 6022).

**PREFILTRATION**



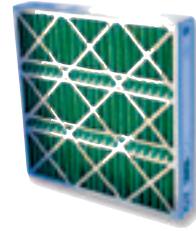
**Ecopleat Green**

Available in every size in 50 and 98 mm depth. Ultra compact when F6 or F7 are required. Design to upgrade G4 panel filter. 100% incinerable.



**Cammetal Stainless Steel**

G2 G3 efficiency acc. to EN 779:2002. Totally washable. High mechanical strength.



**Camfil Farr 30x30**

High mechanical strength. Rigid, water resistant cardboard frame. Unique tapered radial pleat design. Fully supported media bonded onto a wire support grid. Bonded into case to eliminate air by-pass.



**Media**

A full range of glass fiber and synthetic media available.

**ADVANTAGES OF ABS AND NON CORROSIVE COMPONENTS**



**OPAKFIL Green**

Corrosion free. Up to 5000 m<sup>3</sup>/h in accordance with European Standard EN 779:2002 in 595x595x292 format. F6 to H11. Easy to handle with its new handles.

**Opakfil GT**

Developed for high humidity condition. F7 to H11.



**Hi-Flo Green**

Plastic frame. Long service life. Low pressure drop.

**In short: a G4 filter has an inefficiency of 90 % against small fungal spores!**

EN779:2002	Efficiency	1 µm	0.5 µm
G4	≥ 90 % gravimetric	10 %	5 %
F5	from 40 to 60 % opacimetric	30 %	10 %
F7	from 80 to 90 % opacimetric	45 %	25 %
F8	from 90 to 95 % opacimetric	85 %	70 %
F9	≥ 95 % opacimetric	95 %	90 %

**Test method according to the EN 779:2002**

Ten years after its application, the standard EN 779:1993 has been replaced by its revised version: the EN 779:2002.

It mainly brings 5 fundamental modifications :

1. Particle efficiency measurement (and not dust spot efficiency any longer).
2. The spray used is DEHS (same as for HEPA filters).
3. Observed particle sizes = 0.4 µm.
4. The appendix A (normative) describes a procedure of electrostatic discharge to put in evidence the drop of efficiency of the electrostatic filters in time.
5. The appendix E defines a new test report which we can supply.

# sensitive area



## SENSITIVE AREA

### Definition

An area in which the risk of biocontamination of the product is high to average, according to Standard EN/DIS 14698-1.

### Examples of applications

Atmosphere in slicing, carving and processing rooms.  
Atmosphere in pre-packing rooms.  
Maturation areas.  
Sensitive airlock for personnel, equipment and materials...

### Air quality

High level of microbiological cleanness.  
Conditioning of atmosphere in turbulent flow in class: 10,000 to 100,000 (fed. std. 209 E), M5.5 to M6.5 (fed. std. 209 E), ISO 7 to ISO 8 (EN 14644-1), according to stage in process.

### Recommended air filtration solution

HEPA H10 (EN 1822) efficiency for an average risk level, to HEPA H12 (EN 1822) for a high risk level.  
"SOFILAIR Green" high flow rate HEPA filtering cell. Inox stainless-steel case located as close as possible to the point of use.

### CAMFIL FARR STAINLESS STEEL CASINGS



For perfect fitting of HEPA filters

Highly flexible installation

Modular system ready for connection.

Easier maintenance

Access via inspection door. Instant clamping without tools.

Secure fitting

Camfil clamping device: a 1/4 turn is sufficient for perfect fitting of the filter.

### SERVICE LIFE

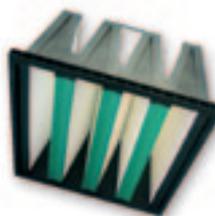
Savings can be made by providing **good protection** for HEPA final filtration.

**3 to 6 months**

is the service life of an HEPA filter in direct contact with the outside air.

Good combined F7, F8 filtration makes a service life of **5 years** possible.

### OPAKFIL GREEN HEPA



Corrosion free

Up to 4000 m<sup>3</sup>/h in accordance with European Standard EN 1822 in 595x595x292 format. F6 to H11.

Easy to handle with its new handles

### SOFILAIR GREEN



Very high efficiency at a high flow rate with absolute safety

Certified efficiency in accordance with European Standard EN 1822. Tested on leaving production.

Total traceability Individual serial number.

Economical

Up to 5000 m<sup>3</sup>/h treated in a format of 610x610x292 mm.

Low pressure drop

Adapted To operating conditions in the food processing industry.

ABS and stainless steel casings are available

## Classification of HEPA/ULPA filters (Standard EN 1822)

Filter group	Filter class	Overall MPPS efficiency, %	Local MPPS efficiency, %
HEPA (H)	H10	≥ 85	–
	H11	≥ 95	–
	H12	≥ 99.5	–
	H13	≥ 99.95	≥ 99.75
	H14	≥ 99.995	≥ 99.975
ULPA (U)	U15	≥ 99.9995	≥ 99.9975
	U16	≥ 99.99995	≥ 99.99975
	U17	≥ 99.999995	≥ 99.9999

HEPA: High Efficiency Particulate Air (filter)    ULPA: Ultra Low Penetration Air (filter)  
MPPS: Most Penetrating Particle Size

## The EN 1822, that is:

- **A guarantee of integrity**  
All the filters from H13 have to undergo an individual leak control : scanning report systematically supplied with the filters.
- **A control at the MPPS**  
Test with DEHS ≥ particles from 0.12 to 0.17 µm.
- **A guarantee of a local leak rate control**  
Essential for an unidirectional stream.

# ultra-sensitive area



## ULTRA-SENSITIVE AREA

### Definition

An area in which the risk of biocontamination of the product is very high, according to Standard ISO/DIS 14698-1.

### Examples of applications

Carving; boning; trimming. Grinding and fine-grinding areas. Slicing areas. Areas where food is removed from refrigeration prior to pre-packing. Assembly/pre-packing Areas where fermenting agents are prepared ...

### Air quality

Very high level of microbiological cleanness Close protection: class 100/M3.5 (fed. std. 209 E) or ISO 5 (EN 14644-1) in laminar flow. Atmosphere: class 1000/10,000 (fed. std. 209 E) or ISO 6 / ISO 7 (EN 14644-1)

### Recommended air filtration solution

High level of risk control. H14 efficiency according to Standard EN 1822. On machine and equipment: Silent Hood filter unit, MEGALAM Laminar-flow panels in SOFDISTRI diffuser case. Laminar canopies: MEGALAM laminar-flow panels mounted on CAMGRID structure. In atmosphere: Silent Hood filter unit, MEGALAM laminar-flow panels in SOFDISTRI diffuser housing or mounted on CAMGRID structure.

## MEGALAM E-PTFE



Camfil Farr together with our partners, has succeeded in developing advanced membrane filtration products.

Its now possible to manufacture HEPA/ULPA from e-PTFE material providing your installation real benefits:

- Low pressure drop (can be up to one-half the pressure drop of a conventional glass fibre filter of the same efficiency).
- Exceptional mechanical resistants of the membrane for easier handling.
- Not susceptible to corrosion and liquid splash.

## MEGALAM GREEN



A full range of 100% incinerable HEPA/ULPA laminar flow panels

Total guaranteed performance at "critical points"

### Conformity

with European Standard EN 1822: each filter is individually tested before being packed.

### Leak test

by MPPS scanning.

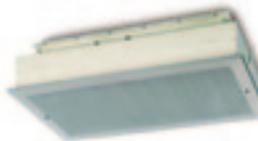
**Efficiency test** overall, MPPS.

**Individually packaged** in a plastic bag in clean room.

### Total traceability

- Individual serial number.
- Individual test certificate.
- "Three-section label" to make your document management easier.

## CAMSEAL



### Design

Integrated terminal filtration diffusion solution featuring the use of aerodynamic techniques and simplicity of implementation.

### HEPA terminal filters at the blowing point

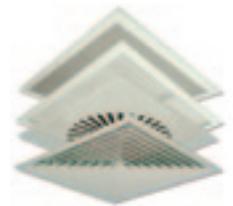
Blowing through the terminal filters for more reliable, simpler and safer risk control, because the air travel between the HEPA filtration and the usage point is minimised.

### Guaranteed tightness

At the perfectly rectilinear and rigid bond line: guaranteed maximum leakage rate of less than 10<sup>-4</sup> (0.01%) at the bond line, consistent with terminal filtration with a minimum efficiency of HEPA H13.

### Perfect construction

Designed to hold a "100% tap" enabling an operator to measure the loss of pressure of the terminal filters and checks can be carried out periodically. Direct access to the terminal filters enables accurate checking of the integrity of the filters and the absence of assembly leakages.



### Non-unidirectional diffusion

Choose from three types of standard diffusion (grille egg-crate, 4 directions or helicoidal) to optimise the mixture "of the filtered air."

1 Hi-Flo Green



2 Ecopleat Green



3 30/30



4 Media



5 Opakfil Green



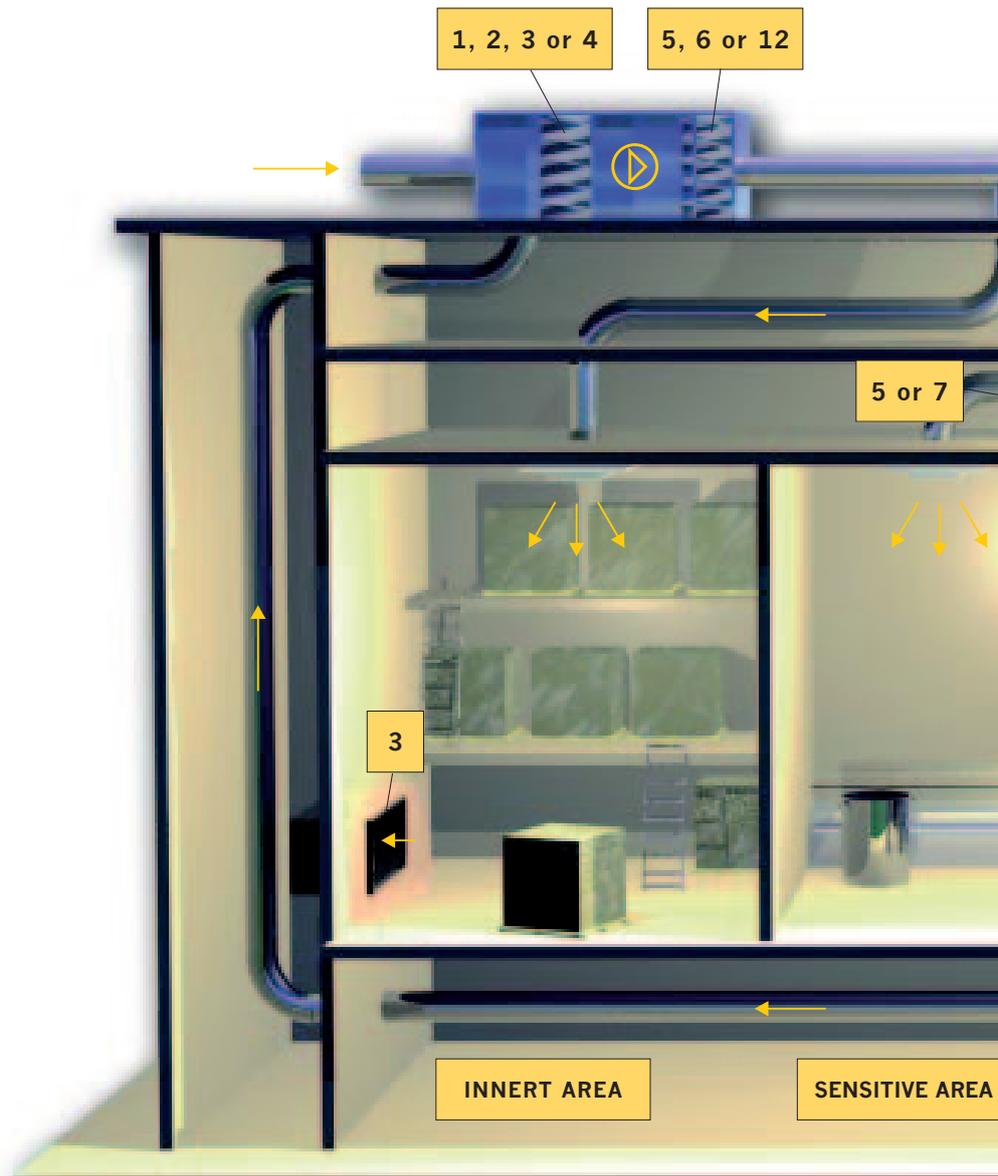
6 Opakfil GT



7 Sofilair Green



# camfil farr solutions for



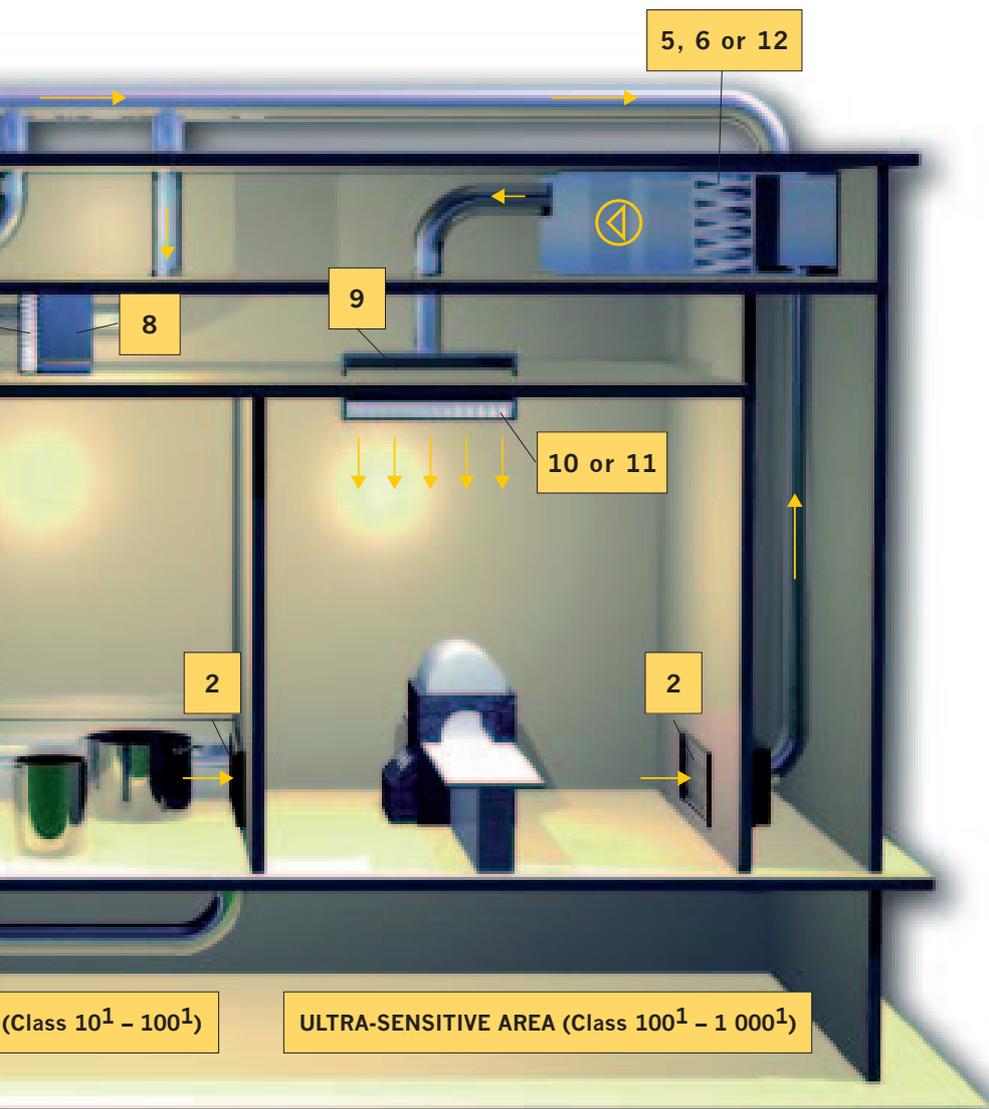
## Expertise & Service

Camfil Farr helps customers understand Air Quality thanks to in situ air samples which can be tested at our international lab. According to Food Industry Customers needs and internal audits, Camfil Farr propose the most suitable Air Filtration Solution.

Camfil Farr understands that filtration is required for legislative compliance but is also an investment that should be protected. Camfil Farr have their own site teams that supply and install. This ensures filters are fitted correctly and are monitored appropriately within the correct legal framework.

Cost efficiency is at the heart of Camfil Farr's customer relationship. Efficiency balances quality and added value requirements with an understanding of the need to minimise whole life costs.

# food processing industry



**8 Stainless steel casings**  
For a personalised selection service please contact us.



**9 CAMSEAL**



**10 Megalam e-PTFE**



**11 Megalam Green**



**12 Citycarb**



**Citysorb**



**Cityflow**



**Camcarb Green**



**Service life**

Savings can be made by providing **GOOD PROTECTION** for HEPA final filtration. **3 to 6 months** is the **service life of an HEPA filter** in direct contact with the outside air. Good **combined F7, F8** filtration makes a service life of **5 years** possible.

**If you have smell problems!**

Camfil Farr have a full range of carbon products for unlike smell/odours/gases. They are: Citycarb, Citysorb, Cityflow and Camcarb Green.

## On world standards...

...Camfil Farr is the global leader in clean air technology and energy efficient air filter solutions with product development, R&D and local representation in the Americas, Europe and Asia-Pacific region.

We supply high quality products and services with the aim of making our customers operations more sustainable, energy efficient and productive.

Our own vision of sustainability is a global approach combining consideration for people, environmental protection and business performance.

Camfil Farr is a member of the United Nations Global Compact programme and follows the GRI sustainability reporting framework.

[www.camfilfarr.com](http://www.camfilfarr.com)

**FOR FURTHER INFORMATION PLEASE CONTACT YOUR NEAREST CAMFIL FARR OFFICE.  
YOU WILL FIND THEM ON OUR WEBSITE.**