




food processing industry

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

human health

Microscopic causes ...

Outdoor air carries 200 to 1500 bacteria per m³.

An air-conditioning system with a capacity of 10,000 m³/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**

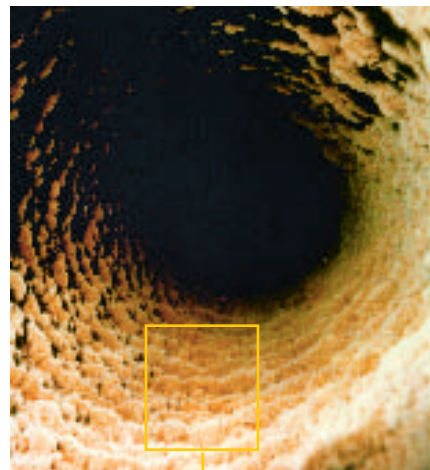
Food hygiene and safety

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 ADPCP/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 biocontamination 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).

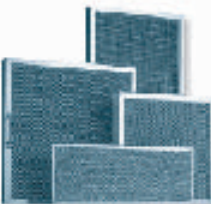
Only fine filtration, with a minimum efficiency of F7 according to European Standard EN 779:2002 and EN 13053, can ensure adequate protection (UNICLIMA Air-conditioning and Health Guide; EUROVENT Recommendation 12/1-92; VDI Standard 6022).

PREFILTRATION



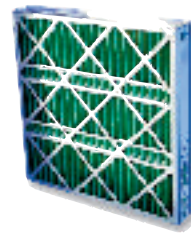
Ecopleat Green

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 according 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 m³/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 m³/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 m³/h treated in a format of 610x610x292 mm.

Low pressure drop

Adapted To operating conditions in the food processing industry.

ABS and stain-less 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 is 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

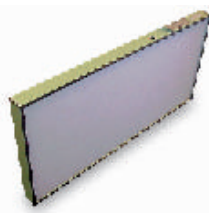


Camfil Farr together with our partners, has succeeded in developing advanced membrane filtration products.

It's 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

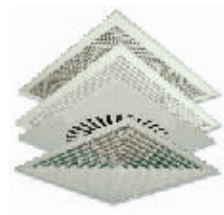
Blowing through the terminal filters for more reliable, simpler and safer risk control, because the air travel between the HEPA filtration and the usage point is minimised.

Guaranteed tightness

At the perfectly rectilinear and rigid bond line: guaranteed maximum leakage rate of less than 10-4 (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-cratecore, 4 directions or helicoidal) to optimise the mixture "of the filtered air."

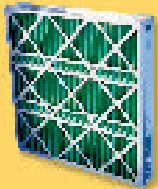
1 Hi-Flo Green



2 Ecopleat Green



3 30/30



4 Media



5 Opakfil Green



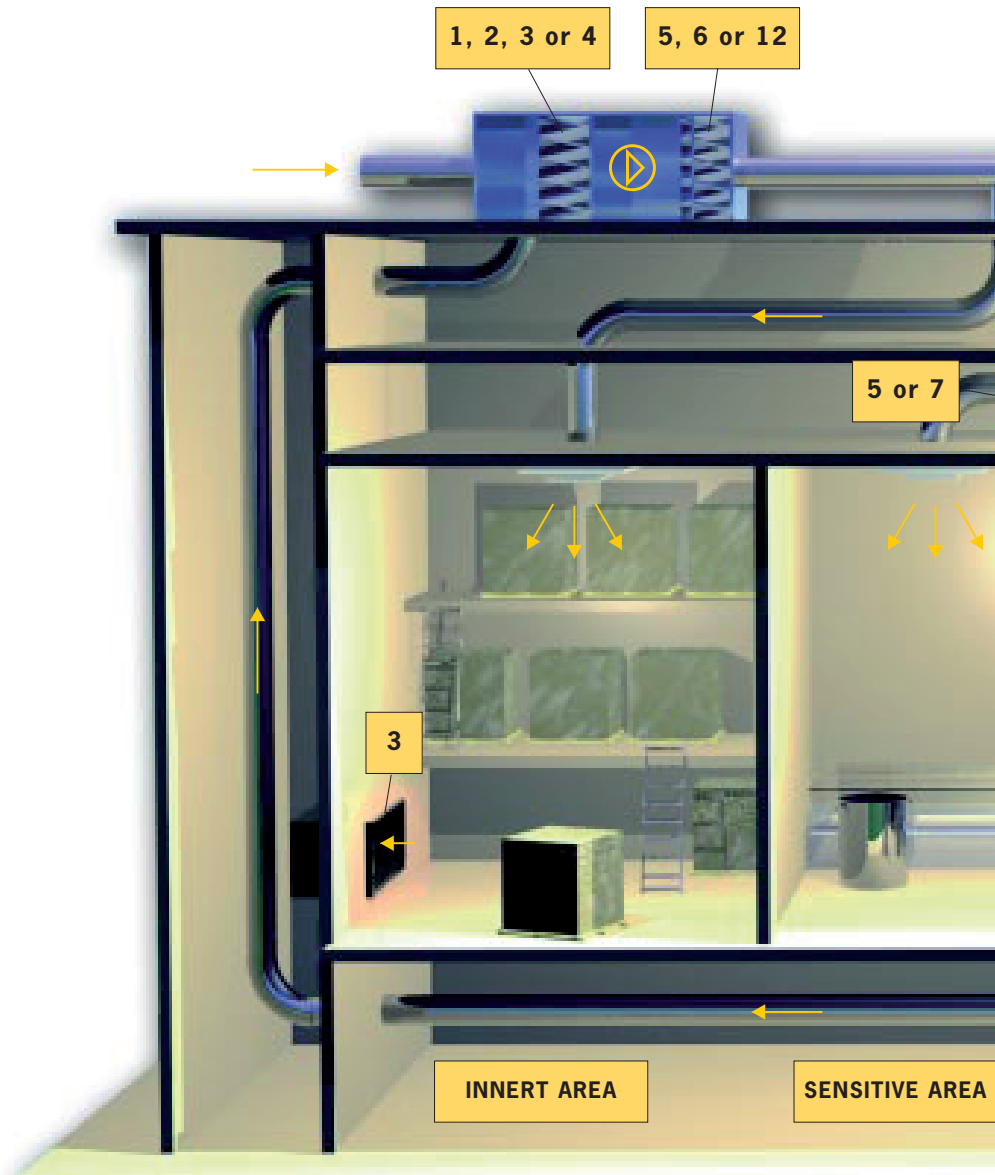
6 Opakfil GT



7 Sofilair Green



camfil farr solutions for



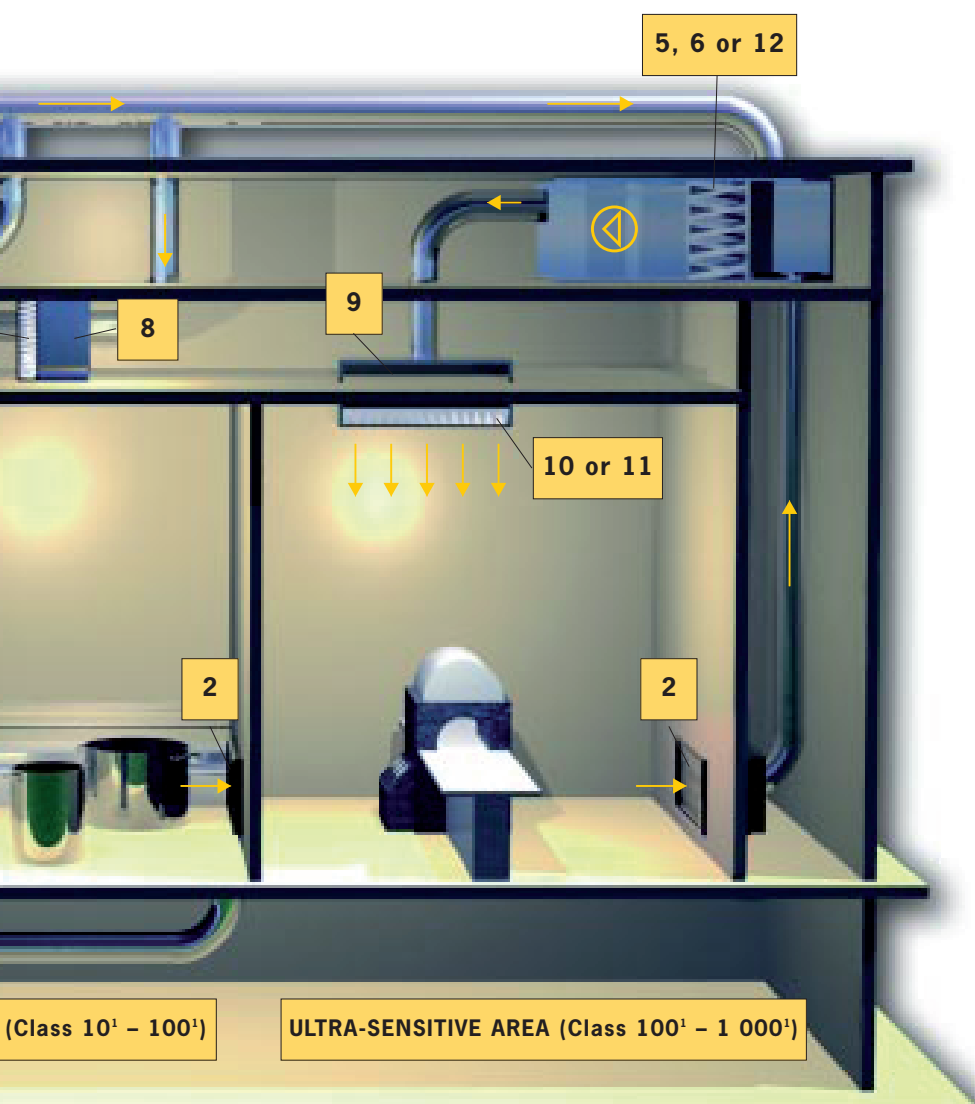
Expertise & Service

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



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.

8 Stainless steel casings

For a personalised selection service please contact us.



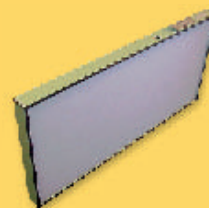
9 CAMSEAL



10 Megalam e-PTFE



11 Megalam Green



12 Citycarb



Citysorb



Cityflow



Camcarb Green



On world standards...

...Camfil Farr is the leader in clean air technology and air filter production.

Camfil Farr has its own product development, R&D and world wide local representation.

Our overall quality goal is to develop, produce and market products and services of such a quality that we aim to exceed our customers expectations.

We see our activities and products as an expression of our quality.

To reach a level of total quality it is necessary to establish an internal work environment where all Camfil Farr employees can succeed together.

This means an environment characterised by openness, confidence and good business understanding.

www.camfilfarr.com

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