



HEALTH CARE FACILITIES

**CAMFIL is the world's largest and leading manufacturer of filters and clean air solutions.**

There is a good chance that, at this very moment, you are breathing clean air that has passed through a filter manufactured by us. Our products can be found everywhere from offices to clean rooms for sensitive electronics production, mines, factories, hospitals and nuclear power stations. Camfil is a global company with 29 subsidiaries, 22 production plants and an extensive network of agents in Europe, North America and Asia.



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

For further information please contact your nearest Camfil office.

Clean air solutions

# CAMFIL IS A WORLD LEADER IN CLEAN AIR TECHNOLOGY AND AIR FILTER PRODUCTION



Camfil is a world leader in clean air technology and air filter production. The Group is represented through subsidiaries and distributors throughout Europe, the United States and Asia. We are the first choice for health care facilities who have critical requirements for the quality within their processes. During this decade, we have supplied over 500,000 m<sup>2</sup> of clean room area with a performance exceeding ISO Class 5. (ISO Class 5 corresponds to M 3.5 according to US Fed. 209E).

As an international air filtration company, Camfil offers our customers a security of long term partnership that is backed by a documented capability to analyse needs and supply total air filtration solutions. Our product range can meet your every need – from standard ventilation filters to highly specialised filters for surgery theatre extremely sensitive to air pollution.

We provide the best possible clean air solutions according to the different standards health care facilities all over the world.

STANDARDS AND RECOMMENDATIONS IN HEALTH CARE FACILITIES		
	<b>EU:</b>	International Standard ISO/DIS 14644-3: Cleanrooms and associated controlled environments (Part 3: Metrology and test methods) + others specific standards
	<b>Belgium:</b>	NFS90-351
	<b>Danemark:</b>	DS/EN ISO 14644-1, DS/EN ISO 14644-2, DS/EN ISO 14644-3 These standards are for laminar airflow
	<b>France:</b>	NFS90-351
	<b>Finland:</b>	No specific standard for health care facilities.
	<b>Germany:</b>	DIN 1946-4 + VDI 2167-1
	<b>Ireland:</b>	Health Technical Memorandum (HTM) 2025Microbiological commissioning and monitoring of operating theatre suites a report of a working party of the hospital infection society (HIS)
	<b>Italy:</b>	D.p.r. 14 gennaio 1997 "ministero della sanità" – istituto superiore per la prevenzione e la sicurezza del lavoro (I.S.P.E.S.I.) dipartimento igiene del lavoro: " linee guida per la definizione degli standard di sicurezza ambientale dei repartioperatori" uni 10339
	<b>Netherlands:</b>	No specific standard for health care facilities. Recommendations according to "Beheersplan luchtbehandeling voor de operatieafdeling, versie maart 2005"
	<b>Republic of China:</b>	Architectural technical code for Hospital Clean Operating Theater, GB50333-2002
	<b>Spain:</b>	UNE 100713:2005
	<b>Sweden:</b>	No specific standard for health care facilities.
	<b>Switzerland:</b>	SWKI/SICC/SITC 99-3 & other european standards
	<b>United Kingdom:</b>	Health Technical Memorandum (HTM) 2025
For other countries not listed above – contact your nearest Camfil office		

## Risk level according to the areas and the air quality

The contamination control requirements vary in health care facilities according to the medical procedures carried out in the areas allocated to these activities. In response to these requirements, it is necessary to first of all perform a risk assessment to define the particulate cleanliness classification appropriate to the specific needs of each area. Having completed this procedure, we can then determine the required performance efficiency for the facility and select the most appropriate equipment in line with the surgical procedures carried out there.

### EXAMPLE OF PROCEDURE

#### Level of risk 4: Very high

Orthopedic neonatal units, aseptic operating theatre suites, burn units, immuno deficient patients, grafts, oncology and haematology-oncology units, high-security microbiology laboratories. Paediatric, intensive care, resuscitation, medical, rad

#### Level of risk 3: High

Paediatric, intensive care, resuscitation, medical, radiology, cancer chemotherapy, haemodialysis, function testing, clinical haematology and chemotherapy units, labour rooms, septic operating theatre suites, obstetric suites, clean side of central sterilization units and microbiology laboratories.

#### Level of risk 2: Medium

Physiotherapy units, medium and long term hospitalisation units psychiatric, maternity and washing areas of central sterilization units, laboratories and laundry



Pr	1	2	3	4
1	1	2	3	4
2	2	4	6	8
3	3	6	9	12
4	4	8	12	16
P	Pr = risk factor associated with the procedure. P = risk factor associated with the patient			

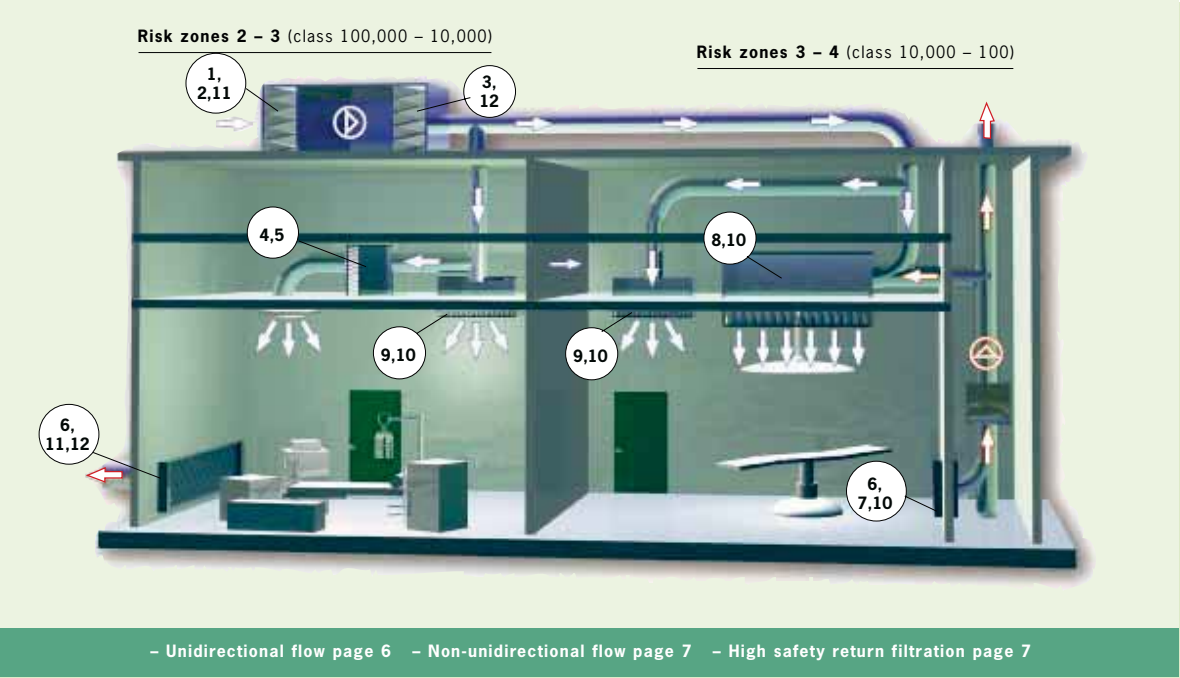
Score of 12 – 16: zone 4 (very high risk zone)  
Score of 6 – 9: zone 3 (high risk zone)  
Score of 2 – 4: zone 2 (moderate risk zone)  
Score of 1: zone 1 (low risk zone)

From risk 4 (the highest) to risk 1 (non-specific areas), each risk area will be classified and linked with a target technical efficiency level.

After the risk evaluation and mapping, each area will receive an adapted air filtration solution.

# CAMFIL SOLUTIONS FOR HEALTH CARE FACILITIES

Camfil designs, tests and manufactures air filtration solutions in compliance with the requirements for extremely high-risk areas. At Camfil, safety is a priority. We are committed to rigorously testing all the air filtration systems we recommend, according to European standards. This pledge to delivery quality is your guarantee of total traceability. From risk level 1 to 4, you stand to benefit from Camfil knowledge as the world leader in this area by consulting our projects and installations units.



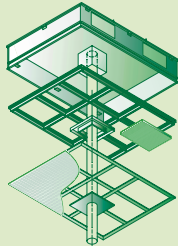
- 1 Hi-Flo
- 2 Cam-Flo G
- 3 Opakfil Green
- 4 Camfil Casings   
For a personalised selection service please contact us.
- 5 Sofilair Green



6 Camsafe



7 Ecopleat Green



8 CamHosp  
See page 6.



9 Camseal  
Blowing or exhaust solution. See page 7.



10 Megalam



11 30/30



12 CityCarb



CitySorb

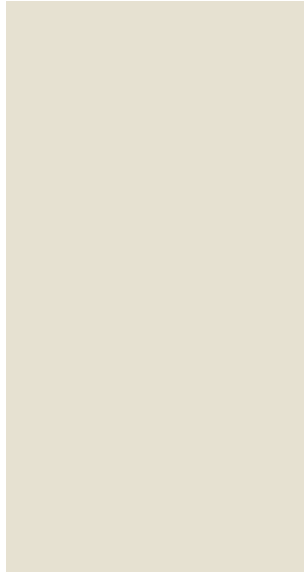


City-Flo



Camcarb Green

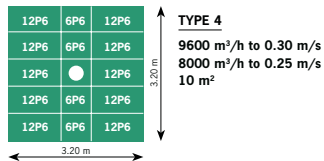
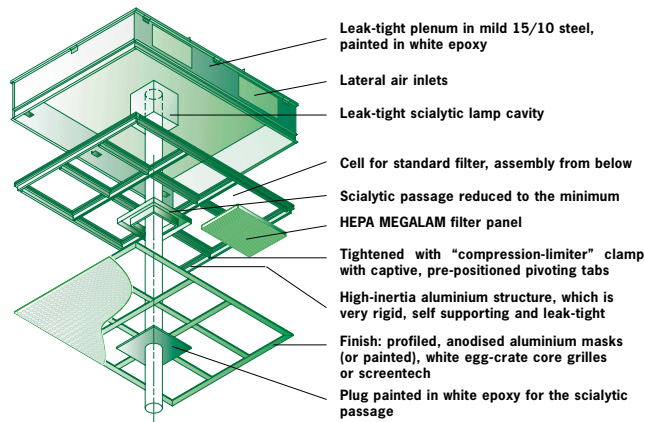
# UNDIRECTIONAL FLOW



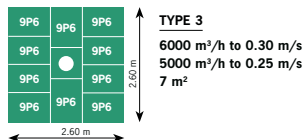
When you need a perfect unidirectional air flow – CamHosp is the product you need.

In general, CamHosp can be installed in two to three hours by two people. The plenum, structure and filters are provided with very detailed instructions. On request

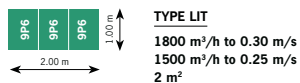
Camfil will assemble the unit and/or test it. Use Screentech and increase lifetime for filter by protecting them from example splash.



The type 4 CamHosp ceiling has an operating area of approximately 10 m<sup>2</sup> in ISO classes 5 to 7. It is ideal for major operations (orthopaedic, cardio, etc.), as it offers the surgical team a large degree of ease (UNICLIMA recommendation in the Guide to air treatment in hospital environments). Used at a speed of 0.25 m/s – 0.30 m/s, this model produces an air change rate in the region of 60 to 70 vol/h for a 45 m<sup>2</sup> operating theatre suite.



Types 3 and 2 with blowing areas of 7 and 5m<sup>2</sup> meet the needs for less major surgeries. A type 3 CamHosp, for example, ensures the minimum rate required by the NF S90-351 standard in zone 4 (50 vol/h) for a 40m<sup>2</sup> operating theatre suite, operating at an average speed of 0.30 m/s.



In extremely sensitive departments (major burns, immunodeficient patients, etc.) CamHosp includes a format adapted to provide localised protection of a bed.

# NON-UNDIRECTIONAL FLOW



The Camseal reloadable filtered diffuser is designed to hold the HEPA MEGALAM terminal filtration stage for zones 3 and 2 in non-undirectional flows.

## Advantages:

### 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.

### Safe fitting of filters

Through the use of Camfil's clamping system with a compression limiter by fool proof stop which makes excessive compression of the seal impossible.

### 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. With a system of clamping "from underneath" it is very easy and quick to replace a faulty filter.

### Non-undirectional diffusion

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

## CamSafe: High safety return filtration



CAMSAFE: Modular safety housing, using a heat-sealable, leak-tight plastic bag for replacements

### Application

Biological, chemical and radioactive risks, nuclear medicine, mortuaries, bacteriology, virology, and infectious disease risks, zones classified as P3 or P4 where it is compulsory to treat the exhaust air because of:

- micro-organisms or toxic particles: HEPA filtration with SOFILAIR
- toxic or radioactive emissions: ACTICARB activated carbon filtration

### Advantages

CAMSAFE fulfils the criteria for:

Standardised tightness

Class 3 = ISO 10648-2 at 5000Pa

Class C = EUROVENT 2/2 at 5000Pa

Class B = En 1886 at 5000Pa

### Decontaminability

Full RAL 9010 white oven-baked epoxy paint 70µm thickness, smooth decontaminable surface.

### Tightening of filters without tools

Rapid locking using a lifetime-set cam system with spring tab.