

Small problems quickly become big ones.

**CamCleaner air purifier.**

Camfil Farr

Product brochure

CamCleaner air purifier

Camfil Farr – clean air solutions









## **Take care of your smallest problems. Before they become big ones.**

CamCleaner is a range of patented air purifiers with the most efficient HEPA filters on the market. They are designed to work as a supplement to your existing ventilation system and give you reduced energy costs, more efficient production and a healthier work environment with less dust and fewer harmful particles. On the following pages you can find out how CamCleaner can make the air feel easier to breathe. And why you save money when you take care of your smallest problems. Before they become big ones.

# This is what you get when you invest in CamCleaner:

## Reduced energy costs.

Efficient air purification means that indoor air can be circulated which means that you do not need to draw in and heat as much cold air from outside. Heating is made more efficient and the energy costs are reduced.

## More efficient production.

CamCleaner can be used in cleaning zones. This means that you can deliver extremely pure air to surfaces that are particularly sensitive while at the same time, other areas of the room can maintain a lower requirement level. This saves money and at the same time, the number of operational disturbances caused by dirt and dust is minimised.

## Reduced need for cleaning.

If you want to reduce cleaning, clean the air. Our filters purify the air and remove dust. When the air is completely free from particles and

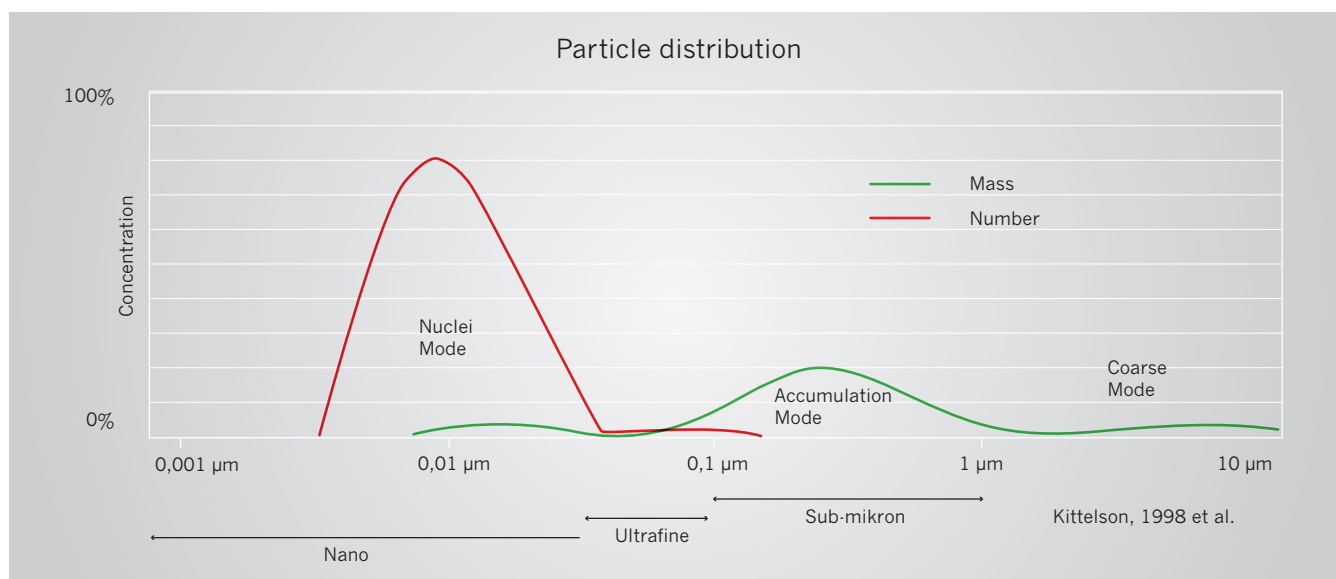
dust, your products are protected. Parts of the premises that are difficult to clean are kept clean for longer and the cleaning frequency may be reduced by up to 50 per cent.

## Healthier employees.

Poor air can lead to headaches, asthma and irritation of the respiratory tract. Contaminated air affects both the health of the personnel and their performance. On the other hand, clean air results in reduced absence due to illness, improved work performance and an increased feeling of wellbeing.

## A better environment.

We use Absolute Filters because they purify mechanically instead of electrostatically. Electrostatic and hybrid filters release harmful chemicals into the air such as ozone and free radicals. All our filters are environmentally labelled and are classified and standardised.



If you brought together the mass of nanoparticles floating in the air around us, their area would be thousands of times greater than that of the heavier particles. The red graph shows that 99 per cent of the particles in the environment are nanoparticles. Those around 2,5µm and larger are few in number but weigh more. The nanoparticles gradually clusters together and form larger particles.





## Cleaner air saves money.

CamCleaner purifies the air of even the smallest particles. Our HEPA filters are so efficient that the air must pass through the ventilation system three times to achieve the same level of air purification as from one circulation through CamCleaner.

As well as the air becoming considerably cleaner, the heating is made more efficient and the energy costs are reduced. With CamCleaner as a supplement to your existing ventilation system, you can circulate and clean the heated air which is already present in the room instead of drawing in and heating new cold air from outside.

CamCleaner can save even more money in rooms with high ceilings, especially during winter. Since heat rises, the temperature is higher at the ceiling than the floor. CamCleaner remixes the air, which equalises the difference in temperature. The result is warmer air by the floor which, in turn, means that the heating system does not need to work as hard.

Various factors which make CamCleaner a money-saving investment include the fact that cleaner air extends the product life of lighting, trucks, storage systems and other technical equipment.



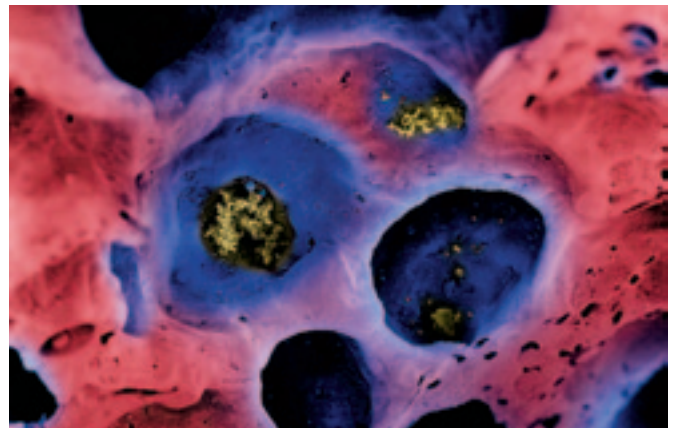
A ceiling-mounted CamCleaner efficiently purifies the air of nanoparticles as well as of large visible bits of dust. At the same time, the air is remixed, which provides a higher average temperature at floor level.



# A better work environment.

Poor air quality affects both the health of the personnel and their performance. Bacteria, dust, viruses and harmful particles in the air may cause itchy eyes, headaches and a blocked nose. Furthermore, it can also give rise to asthma and irritation of the respiratory tract. CamCleaner purifies the air and effectively combats these problems. This leads to improved work performance, reduced absence due to illness, and air that feels easy to breathe.

At the same time you will notice how shelves, products in stock, furniture and equipment no longer gather dust as easily. Your products are protected and your production is made more efficient. Parts of the premises that are difficult to clean are kept clean for longer and the need for cleaning is reduced – it is not unusual for the cleaning frequency to be halved.



Nanoparticles from diesel emissions have formed a cluster in the alveoli. In the long term this can lead to cardiovascular diseases. This is an increasingly common problem in buildings situated in environments with heavy traffic.



CamCleaner's high-efficiency HEPA filter purifies the air of even the smallest nanoparticles. The air feels easier to breathe, the personnel are healthier and the need for cleaning is reduced.

## Cleaning zones achieve more effective air purification.

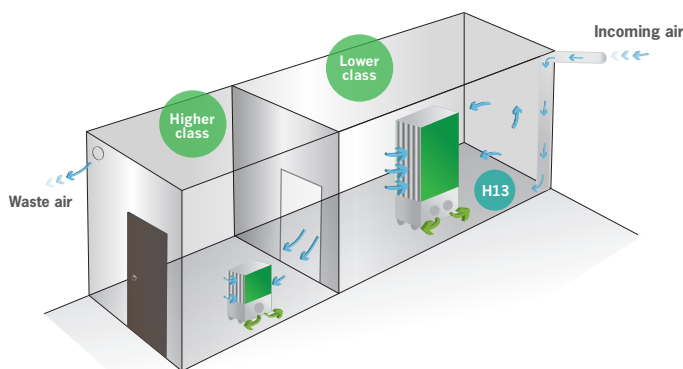
In large premises, you often have different air quality requirements depending on the type of operations taking place in different parts of the building.

Despite being based on the same ventilation system, CamCleaner can control how clean the air is in various zones, even if there are no walls dividing up the premises. This is possible because CamCleaner can transport air over a long range and deliver the air into particularly sensitive parts of the premises. The CamCleaner units optimise the air flow in order to meet the demands of your business.



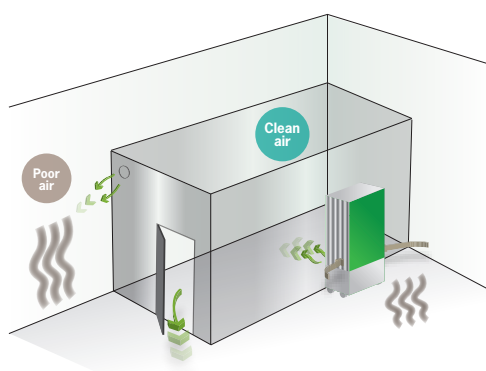
The picture shows a bottling plant that requires a lot of clean air behind its glazed surfaces. Air from outside is drawn into CamCleaner and passes through the high-efficiency HEPA filter before it is directed into the bottling plant.





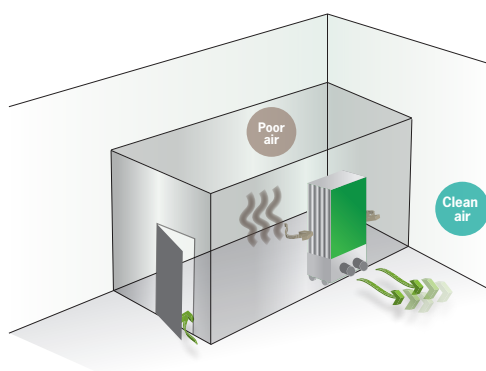
## Two air purifiers work together in a cleaning system.

In compartment 1, the incoming air creates overpressure. This means that the air, after it has passed through the air purifier, is transported to compartment 2. There, the air is sucked through another CamCleaner, which further raises the air quality. You can also use various effective filters in the air purifiers to control the air quality. In this instance, a class H13 filter is used in compartment 1, where the contaminated incoming air enters. This method is used in premises used for production, in air locks as well as in other environments.



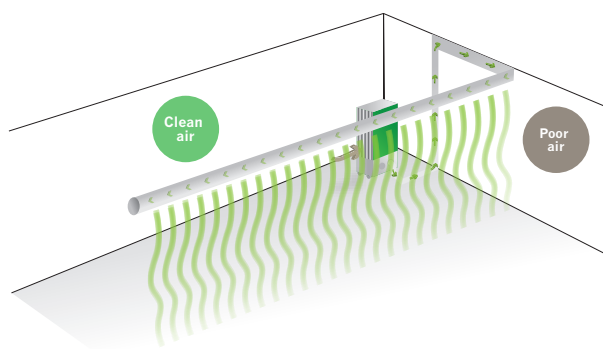
## Overpressure.

Exactly as in the example above, overpressure is created when the air is purified and enters the compartment. By doing this, a thoroughly controlled indoor environment is achieved in the space in question. This is useful in processes such as those involving installation, food, electronic installation, and other sensitive production units.



## Underpressure.

In this example, the air is sucked from the compartment and purified before it is discharged into the room. CamCleaner also makes it possible to clean the air many times before allowing it to be released, in order to achieve increased control over the air quality. Underpressure is used, for example, on building sites, and in industries and places where a small dirty production area in large premises needs to be isolated.



## Cleaning zone in open premises.

In this example, the air is purified in the CamCleaner unit's HEPA filter. Then it passes through the pipe along the ceiling, where air is discharged from the holes along the wall. The purified air thus creates a sort of curtain that divides the room into two zones; one with higher quality air and one with lower quality air.

## Three examples showing how CamCleaner makes a difference.



### Storage/production – 100000 m<sup>2</sup>

**Problem:**

36,500 m<sup>2</sup> storage area with dirty goods  
Unhealthy work environment  
Low temperature levels during the winter months

**Solution:**

Service contract for 33 x CamCleaner 6000 mounted on pillars, floors and ceilings and 15 x floor-standing CamCleaner 30000  
Constant airflow  
Operation and fan speed control and air flow control via the Internet.

**Result:**

Higher temperature levels during the winter months  
Higher average floor temperature  
Better work environment – 50 per cent better air quality  
Reduced need for cleaning

Comfort and cleaning system in chambers with CC 30000.





## Server room – 1 000m<sup>2</sup>

### **Problem:**

Server room conversion with a total area of 1,000m<sup>2</sup>  
Inadequate air quality control  
Inadequate temperature control

### **Solution:**

16 x CamCleaner 6000 installed during the conversion, two in each server room as well as a number of additional ones in climate chambers

### **Result:**

Optimal air quality and temperature. The server room was able to remain operational while the conversion is carried out  
Reduced energy consumption



## Storage/logistics – 7 500m<sup>2</sup>

### **Problem:**

Dust and dirty in a 7,500 m<sup>2</sup> storage area  
Unhealthy work environment  
Problems with packaging machine's sensors

### **Solution:**

Service and lease agreement for 5 x pillar-mounted CamCleaner CC6000  
Constant airflow  
Real-time measurement of particles  
Operation and fan speed control and air flow control via the Internet.

### **Result:**

No more problems with the packaging machine's sensors  
Fewer disturbances and operational stoppages  
Better work environment – 50 per cent better air quality  
Lower energy costs as a result of a higher average temperature at floor level  
Reduced need to change air via ventilation as a result of efficient filtering

Floor-standing CamCleaner CC6000.

## Patented technology prevents small problems from becoming big ones.

CamCleaner is characterised by high-efficiency cleaning, energy saving and almost silent operation. In contrast to all other air purifiers on the market, our HEPA filters have a degree of purification that can remove even the smallest particles which are the hardest to reach. CamCleaner is also completely unique because it can suck in air from two directions. It makes it possible to have different cleaning zones which improves the efficiency of the air purification significantly.

Inbuilt sensors that automatically regulate the indoor environment are available as optional extras.

The quality of the air is then adapted to suit the number of people in the room.

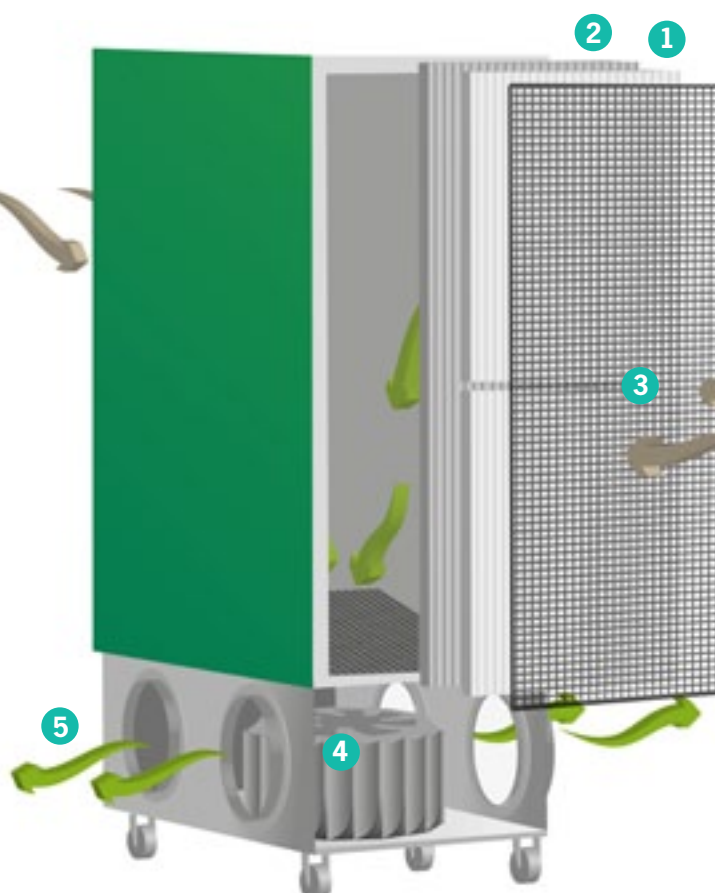
CamCleaner 30000 and CamCleaner 6000 can also be connected via ModBus for remote control and review of the filter change interval.

### CamCleaner 6000

1. Firstly the air passes through two pre-filters – usually a pleated EcoPleat or bag filter.

2. Behind these is the HEPA filter which has a unique, environmentally friendly Absolute filter. It is so efficient that the air must pass through the ventilation system three times to achieve the same level of air purification as from one circulation through CamCleaner. Thanks to a very large filter surface, the product life is extended and the filtration efficiency increased. By carefully managing the replacement of pre-filters, you can extend the product life of the HEPA filter even more.

3. All CamCleaner models have at least two inlets which makes it possible to mix and purify the air from two areas with different temperatures.



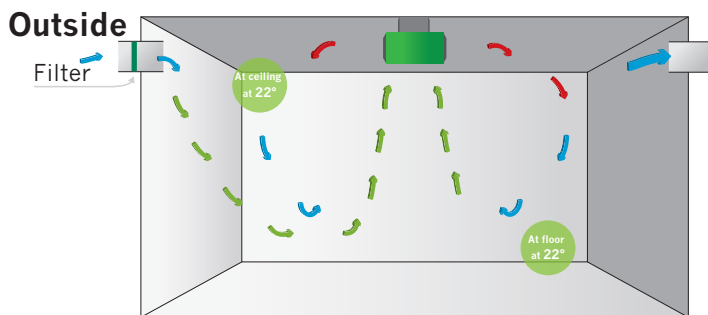
4. The only moving part in a CamCleaner is the fan. The fan is located under the filters and creates an even underpressure in the purified air column that comes after the filters. Our EC fans have a low energy consumption and may be controlled via the Internet for optimised, on-demand air purification and notification of when the filters need to be changed.

5. The outlets may be on two sides with 315 mm round standard connections or with silencers on one or both sides. This makes it possible to connect CamCleaner 6000 to most sizes of pipe as well as allowing it to stand and recirculate.



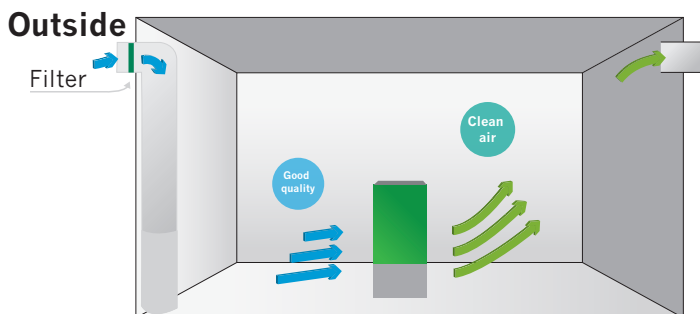
# How to position CamCleaner.

By taking the existing ventilation, the temperature conditions of the room as well as problems in the form of dust and particle generation areas into account, we determine how CamCleaner's air purification units should be positioned for optimum efficiency. Below you will see some example diagrams of how positioning may appear in different rooms.



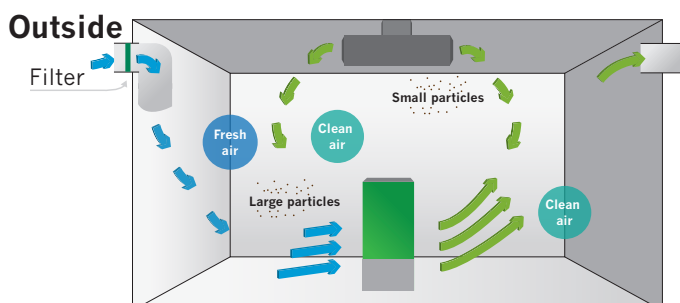
## In rooms with high ceilings.

The ventilation supplies the room with oxygen rich air. Since the ceiling height is generous, CamCleaner is suspended from the ceiling from where it supplies the entire room with a better and cleaner indoor environment. Since heat rises, the temperature is normally higher at the ceiling. CamCleaner remixes the air and raises the temperature at floor level which means that the heating costs may be reduced.



## With displacement ventilation.

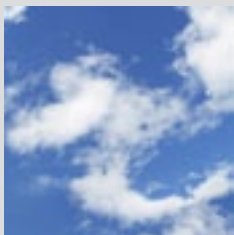
This type of ventilation involves the inflow of supply air travels along the floor and maintains a lower temperature than the air in the room. Therefore you should aim CamCleaner's outlet in the same direction as the flow so that it works with the air flows and not against them.



## Floor and ceiling air purification

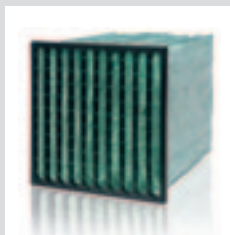
In rooms with high ceilings, the most efficient solution is to combine a ceiling-suspended CamCleaner with a floor-standing unit. Because the larger particles fall to the ground considerably faster than nanoparticles, you can therefore handle each type of particle at the point where they are most commonly found.

# How pure is the air in your rooms?



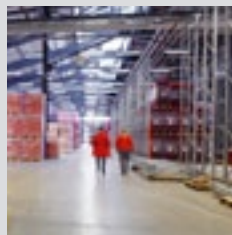
## Outdoor air.

Contains approximately  
100,000,000 particles/m<sup>3</sup>.



## Filters in general ventilation.

Our market leading F7-classified filters have a minimum purification efficiency of 56 per cent.



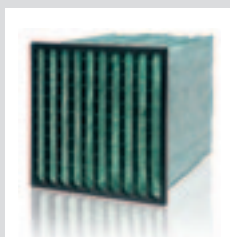
## Rooms without CamCleaner.

44,000,000 particles/m<sup>3</sup> pass through the filter and remain in the indoor environment.



## Outdoor air.

Contains approximately  
100,000,000 particles/m<sup>3</sup>.



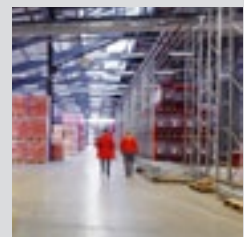
## Filters in general ventilation.

Our market leading class F7 filters have a minimum purification efficiency of 56 per cent.



## Rooms with CamCleaner.

CamCleaner's HEPA filter purifies 99.93 per cent of the air particles in the indoor environment.



## Clean air.

Only 31,000 particles/m<sup>3</sup> remain.



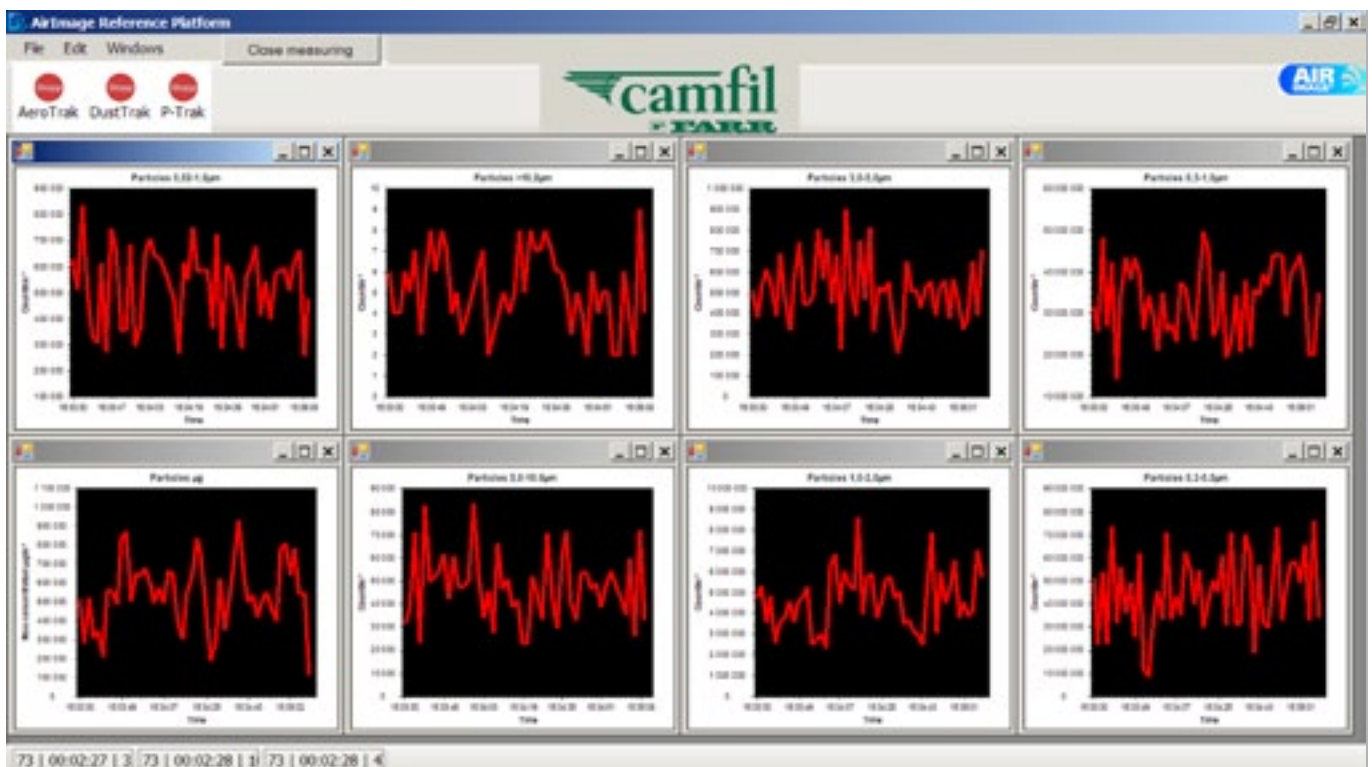
# Camfil IAQ Analysis – monitors and measures your air quality in real time.

IAQ stands for Indoor Air Quality and is a measurement of the quality of indoor air. As an additional option for your CamCleaner system, you can choose Camfil IAQ Analysis which provides a direct picture of the air quality in your rooms. We monitor the air quality, and all measurements are saved in an IAQ database which contains millions of measurement values and benchmarks for the indoor environment and air quality. As a customer, you have the option of viewing the analysis in real time at the time of measuring, and all measurements taken can easily be compared with each other.

With the aid of a calibrated particle counter, the quantity of particles in the air can be examined. By subscribing to this service,

you will, as a customer, always have a particle counter in place connected to a computer which monitors the indoor environment. When an abnormal particle distribution is identified, or in cases of other suspected problems, we perform an analysis with a scanning electron microscope (SEM) with associated X-ray analysis system (EDAX). As required, the quantity, weight and structure of the particles are analysed as well as the chemical composition of the air and element content. We have more than 10 year's experience of this. We also work together with many of the world's leading laboratories for further analyses.

Our IAQ reports are based according to the following standards for air classification: SS EN, SS EN ISO and IEST.



Indoor Air Quality Analysis. Measurement of different particle sizes in real-time.



### IAQ Screening.

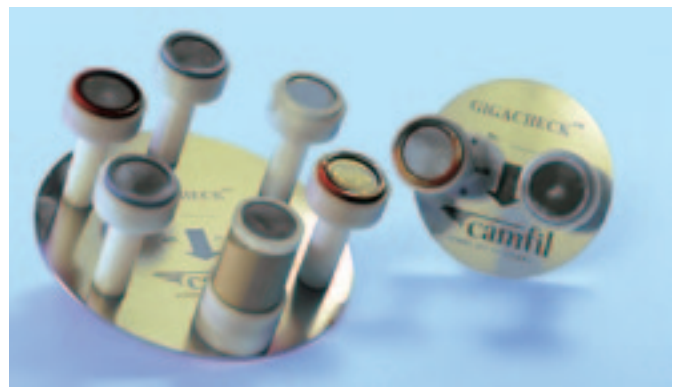
Analyses the air quality at the simple push of a button. The box is placed directly where the measurement values are to be collected and after eight hours, it shows how the air looks chemically, and what type of particles it contains.

### Camfil IAQ Analysis.

A database that contains measurements taken all over the world gives us access to the average values for different indoor environments. With the database as a benchmark, we can display a summary which gives a direct picture of the air quality at our customers' premises.

### Measuring dose.

The air is sucked via a vacuum pump into a stub that collects particles larger than  $0.1\mu\text{m}$ . Using an X-ray system (EDS), even the chemical composition of the particles can be viewed.



### Gigacheck.

A method which selectively measures gaseous airborne molecular contamination.



# A

## Air purifiers for larger rooms.



### **CamCleaner 30000.**

One of the largest mobile air purifiers in the world. Very suitable for use in production facilities and other larger premises where it forms part of a CamCleaner system together with smaller air purifiers. Can be equipped with anything from simple pre-filters to HEPA filters. Allows for the transportation of air over long distances within premises.

Size: 1,320x1,930x3,035 mm  
Air volume: max. 28,000 m<sup>3</sup>/h  
Air purification area: max. 2,000 m<sup>2</sup>



## CamCleaner 6000.

Very suitable for dusty environments and larger premises such as the food industry, workshops and warehouses. CamCleaner 6000 is mobile, efficient and easy to install as a floor-standing, wall or ceiling-mounted unit. It can also be used in combination with Camfil Farr's filter cabinet.

Size: 650x1,810x810 mm  
Air volume: max 9,000 m<sup>3</sup>/h  
Air purification area: max 1,000 m<sup>2</sup>  
Pre-filter + HEPA filter



## CamCleaner 2000.

Used as a mobile unit or floor-standing, wall-mounted or ceiling-mounted. Suitable for both larger premises and for industry. As it can handle construction dust, mould and asbestos, it is suitable for demolition, installation or other aspects of construction. Carbon filters are available as an optional extra for the reduction of smoke, gas and emissions.

Size: 750x1,070x260 mm  
Air volume: max 1,400 m<sup>3</sup>/h  
Air purification area: max 200 m<sup>2</sup>  
Pre-filter + HEPA filter



# A

## Air purifiers for office environments.



### CamCleaner Molecular RRC 850/1700.

Designed to provide the highest level of production efficiency in facilities with sensitive high-technology equipment, and where the elimination of corrosive gases is fundamental to a safe work environment. CamCleaner Molecular Room Recirculation Unit has the lowest energy consumption, the lowest heat generation and the lowest noise level of all air purifiers on the market.

#### 850

Size: 802x2,150x394 mm  
Air volume: 850 m<sup>3</sup>/h  
Air purification area: 150 m<sup>2</sup>  
Pre-filter + 37 kg activated carbon + HEPA filter

#### 1700

Size: 802 x 2,150 x 693 mm  
Air volume: 1,700 m<sup>3</sup>/h  
Air purification area: 300 m<sup>2</sup>  
Pre-filter + 74 kg activated carbon + HEPA filter

### CamCleaner 300.

A small but efficient mobile air purifier which is almost silent. Floor-standing or wall-mounted, it is suitable for offices and smaller spaces. CamCleaner 300 can also be used as a supplement to slightly larger air purifiers.



Size: 280x665x210 mm  
Air volume: 100–300 m<sup>3</sup>/h  
Air purification area: 25 m<sup>2</sup>

### CamCleaner 800.

Suitable for all forms of air purification of indoor environments, such as offices, homes, classrooms, as well as other public environments. CamCleaner 800 purifies normal office air as well as more extreme environments.



Size: 610x560x260 mm  
Air volume: 800 m<sup>3</sup>/h  
Air purification area: 65 m<sup>2</sup>

...are world leaders among air purification technology and energy efficient air filter solutions and have product development, R&D and local representation in North and South America, Europe and Asia-Pacific.

We can offer high-quality products and services which make our customers' businesses more sustainable, energy efficient and productive.

Our own work in sustainability is carried out on a global scale and focuses on people and the environment as well as the efficiency of the business.

We are members of the UN Global Compact programme and follow the GRI model when carrying out our sustainability reports.

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