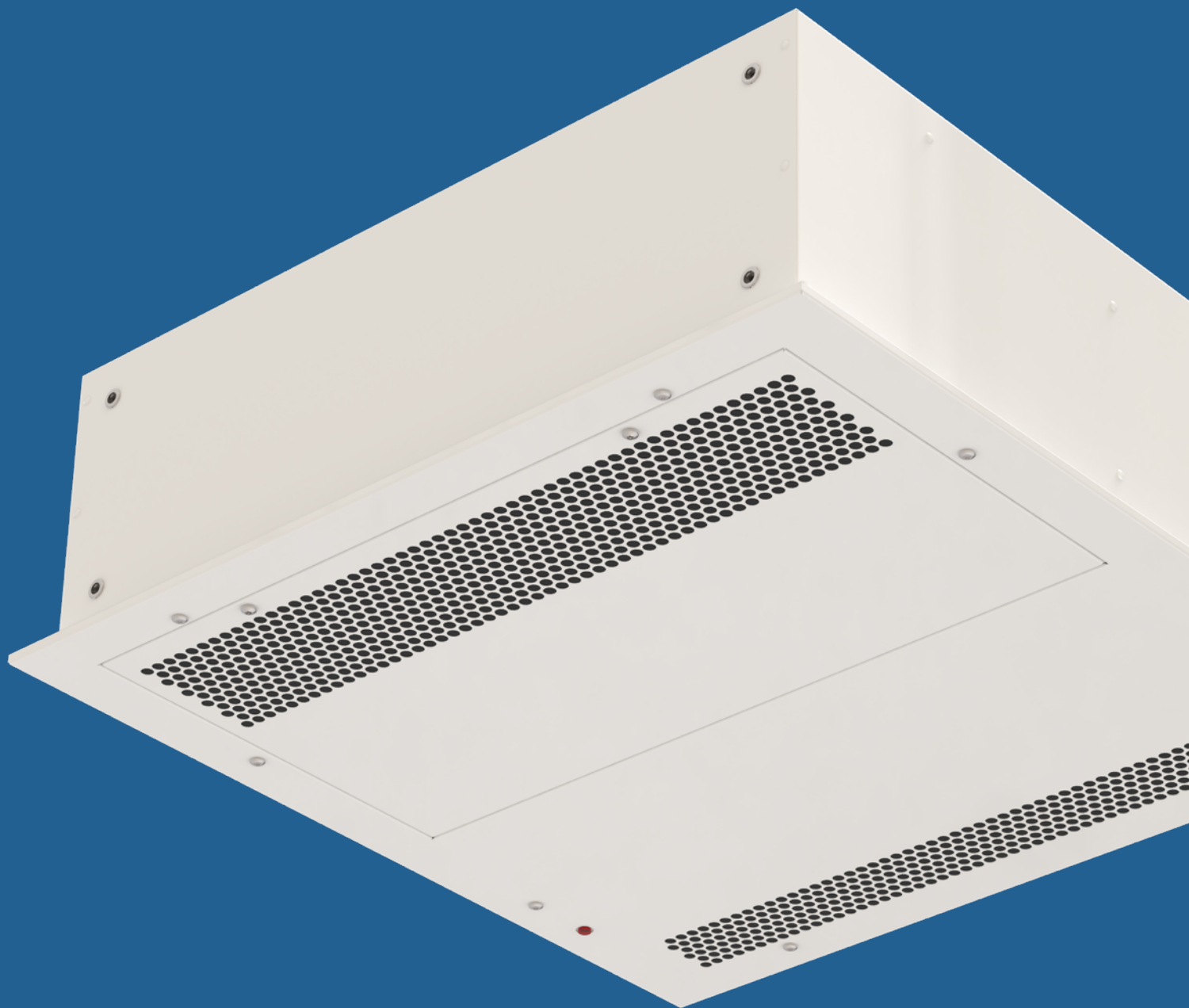


Air and Surfaces Disinfection and Purification



K7 Cassettes
OH+FC and absolute filtration

INDEX



TECHNOLOGY

4



APPLICATIONS

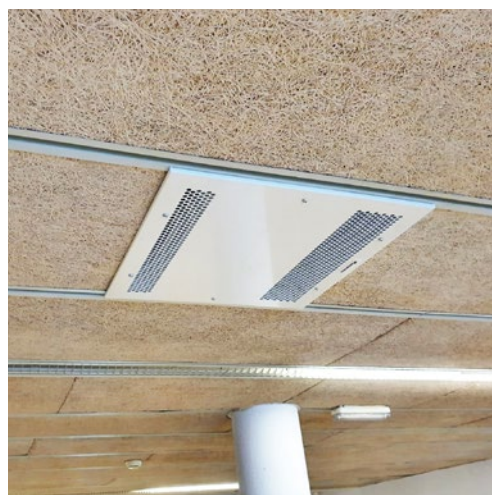
9



PRODUCTS

10

K7 600 OH+FC
K7 770 HEPA
K7 770 HEPA OH+FC



GALLERY

25

Introduction



Airtècnics has developed a disruptive and innovative patented technology that responds to the current and future global need for environmental hygiene.

The new range of purifying devices efficiently generate and expand neutral hydroxyl radicals ($\text{OH}\cdot$) to inactivate up to 99.99% of pathogens and pollutants in the air and on surfaces. This technology is called active because it expands its properties throughout the environment and not only acts on the air passing through the device.

It satisfies the exposure limits for chemical agents adopted by the National Institute for Health and Safety (INSS). These parameters include ozone emissions ($<0.05\text{ppm}$) and hydrogen peroxide emissions ($<1\text{ppm}$ or $<0.1\text{mg/m}^3$).

OH technology has been tested in independent laboratories and more than complies with both limits.



The oxidising agent $\text{OH}\cdot$, qualified as a "natural detergent" due to its capacity to clean the atmosphere, neutralises more than 2,500 different compounds such as carbon dioxide and methane, the main causes of the greenhouse effect. Hydroxyl radicals are produced in nature by the combination of the sun's ultraviolet rays with ozone in the atmosphere, and also by reactions caused by the ozone present in the environment on plant oils (terpenes) that evaporate from plants.

By means of Advanced Oxidation Processes (AOP) produced by hydroxyl radicals ($\text{OH}\cdot$) it is achieved:

- Inactivate up to 99.99% of pathogenic microorganisms (viruses and bacteria).
- Improve air quality by reducing Volatile Organic Compounds (VOCs) and suspended particles (PM).
- Eliminate odours.

Oxidising Agent	Electrochemical Oxidation Potential (EOP)	EOP relative to Chlorine
Fluor	3,06	2,25
Hydroxil Radical	2,80	2,05
Ozone	2,08	1,52
Hydrogen Peroxide	1,78	1,30
Chlorine	1,36	1,00

Source: University of South California

Its great oxidising power is complemented by the chain effect it produces, and releases more Reactive Oxygen Species (ROS), thus generating a wave of purifying and disinfecting agents that spreads through the atmosphere.

Introduction

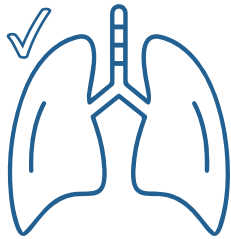
Harmful Agents Inhibited by Hydroxyl Radical Technology OH·



Odours



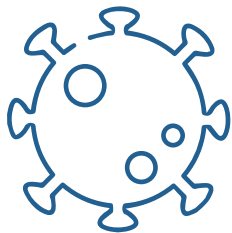
Chemicals



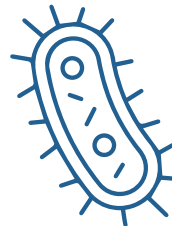
Asthma and allergens



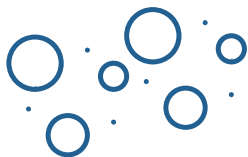
Pollen and
dust mite



Viruses



Bacteria



PM particles



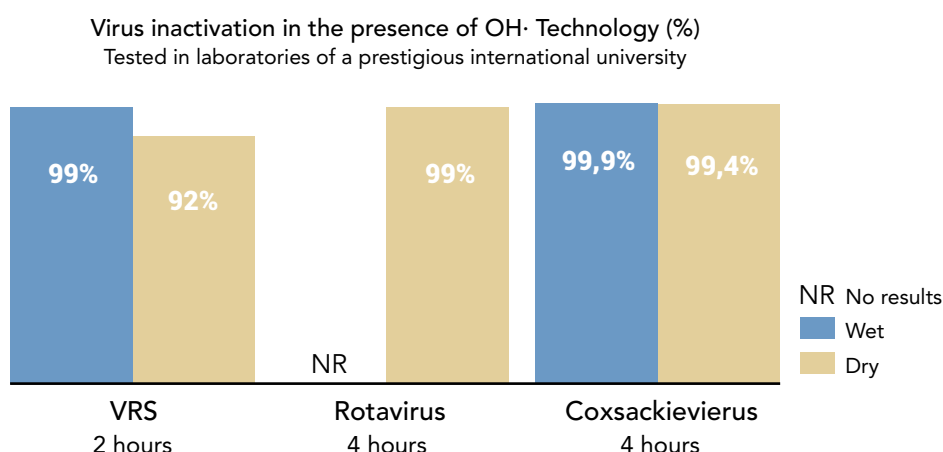
Mould

Efectiveness

The purifying and disinfecting power of OH[•] technology has been tested in several studies on viruses, bacteria, volatile organic compounds, odours and other suspended particles.

Viruses

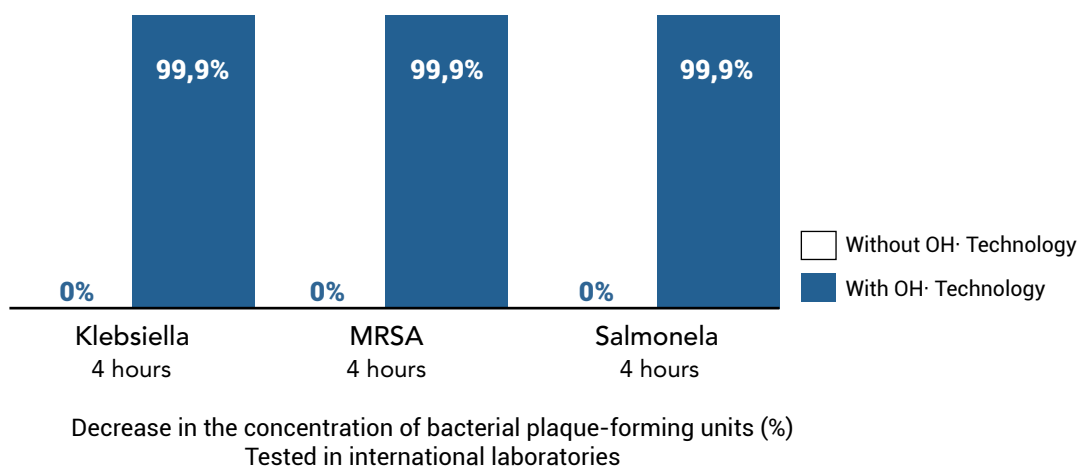
Viruses are the most transmissible pathogen in the environment due to their microscopic size and high volatility. In all surface tests that have been conducted, hydroxyl radicals have inactivated 92-99% of enveloped and non-enveloped viruses in both wet and dry environments. In air, the results are expected to be better because the hydroxyl radical can affect the pathogen across its entire surface.



The efficacy on untested viruses will be similar to that of tested viruses because their morphological structure is similar. Therefore, the results for Covid-19, whose morphological structure is similar to that of the Respiratory Syncytial Virus (RSV), would show an efficacy between 92 and 99%.

Bacteria

In the case of bacteria, the hydroxyl radical reacts with fatty acid chains and proteins, modifying their morphological structure and potentially affecting their genetic information.



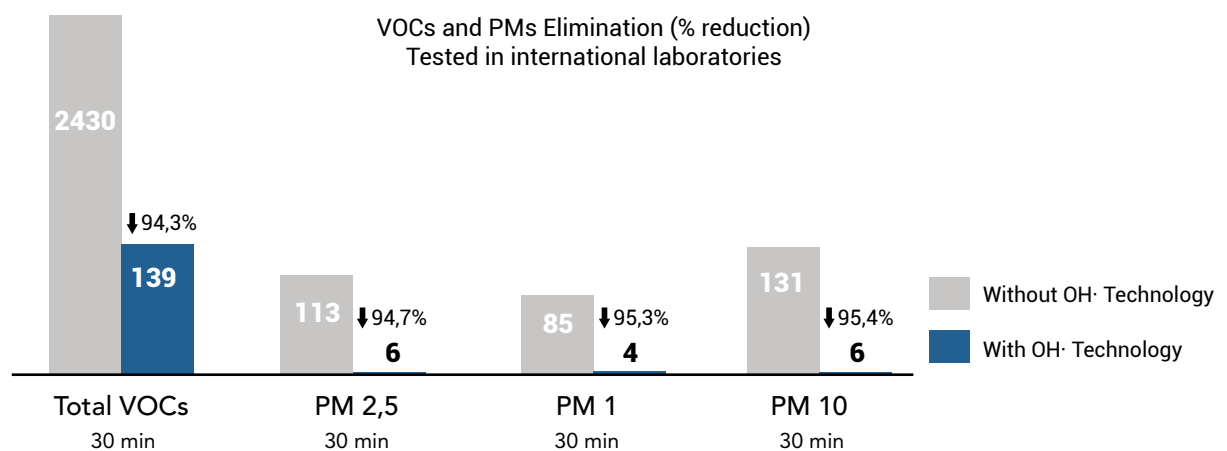
In addition to these tests, other tests were carried out on bacteria *bactilus subtilis*, *Staphylococcus Aureus*, *Pseudomonas Aeruginosa* and *Escherichia Coli* in which a similar efficacy was demonstrated. Several field tests have even been carried out in hospitals and schools showing that it inactivate and prevents the appearance of mould caused by excess humidity.

Effectiveness

Air quality

Air quality is mainly determined by the concentration of Volatile Organic Compounds (VOCs) and particle matter (PM). In one hand, VOCs are carbon-based chemical compounds that may contain fluorine, chlorine, bromine or sulphur, all of which are harmful to health. PM, on the other hand, can cause serious damage to the respiratory system.

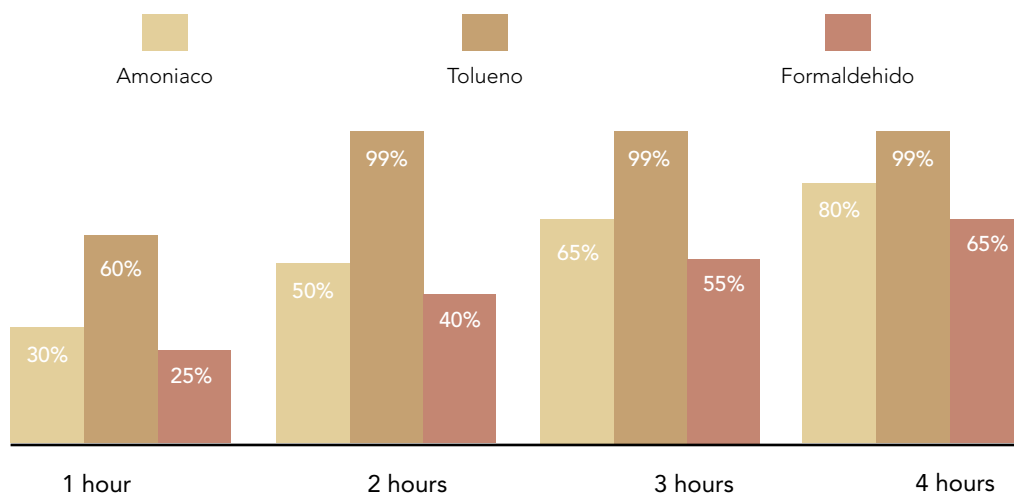
Hydroxyl radicals ($\text{OH}\cdot$) mineralise VOCs and transform them into compounds that are entirely harmless to humans and nature. PM are also affected by these radicals by converting them into heavier compounds that fall to the ground, thus reducing air pollution.



Odours

A pleasant environment must smell good or be odourless. Thanks to the degradation produced by hydroxyl radicals ($\text{OH}\cdot$) a large part of these odors are eliminated within a few hours of exposure to Nuvohla.

The results obtained against the 3 main indicators for odor removal guarantee that the oxidizing technology is perfect for deodorization.



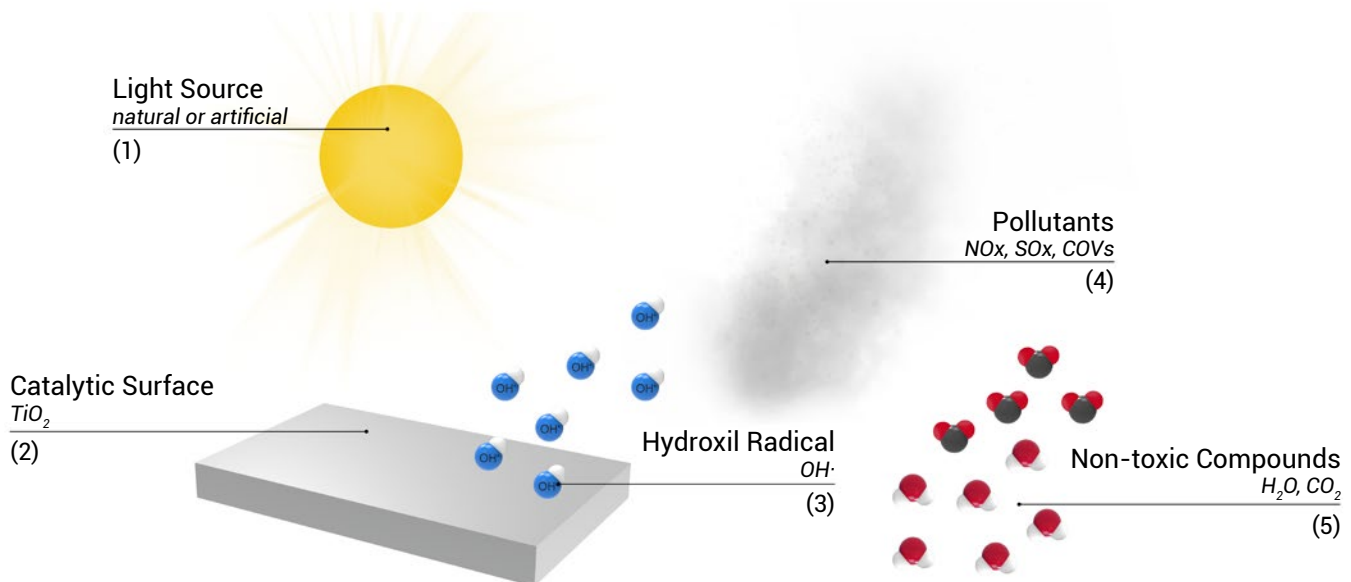
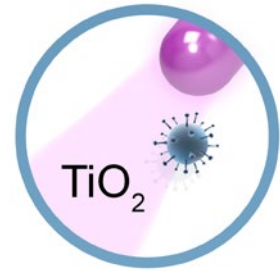
Deodorisation test during the first 4 hours of exposure to $\text{OH}\cdot$ Technology (%)
Tested in international laboratories

Photocatalysis

Photocatalysis is a natural principle that imitates photosynthesis and eliminates usual pollutants in the atmosphere such as carbon monoxides and oxides of nitrogen and sulphur (VOCs, NO_x and SO_x), by means of an oxidation process activated by solar energy.

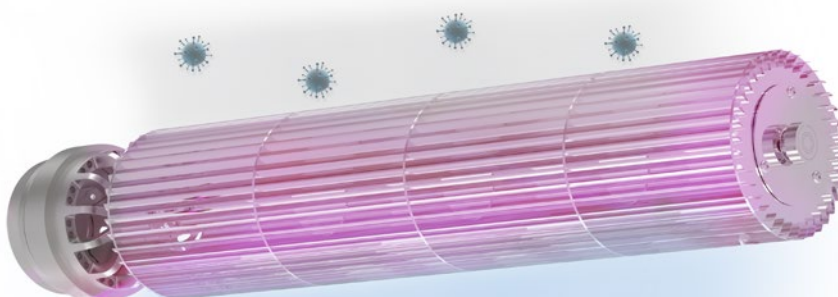
In other words, it is a photochemical reaction that converts solar energy into chemical energy on the surface of a catalyst, which is a semiconductor material that accelerates the rate of reaction. Both oxidation and reduction reactions take place during the process. This promotes the removal of most pollutants from the environment.

Photocatalysis is a passive technology. However, if the environment in which it takes place has a relative humidity of 55% or more, the photocatalytic technology acts as an active technology because the hydroxyl radicals that are generated have the capacity to propagate.



It has a photocatalytic fan with disinfectant action using Kleenfan technology, composed by a turbine treated with Titanium dioxide (TiO₂) that purifies the air by contact. The contaminated air enters the purification unit and passes through the turbine and returns clean to the room.

UV-A rays act on the titanium dioxide in the turbine to generate Reactive Oxygen Species (ROS) which remove a wide range of organisms up to 99.9%. Mineralises most of the pollutants present in urban areas produced by vehicles and industries (NO_x, SO_x, CO_x, formaldehyde, VOCs, among others).

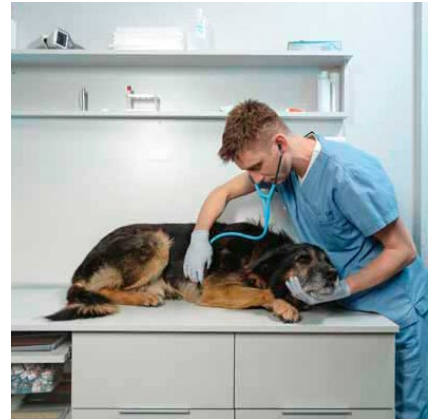




Healthcare Sector



Laboratories



Veterinary clinics



Private sector



Shops and malls



Industry



Cinemas and theaters



Clubs and nightlife



Sport centers



Cassette K7 600 OH+FC

K7 600 cleans and purifies the air and surfaces from all hazardous elements combining a dual technology through the generation of active $\text{OH}\cdot$ Technology and the effect of photocatalysis.

Its application field is very wide: Hospitals, laboratories, food conservation, public spaces, education buildings, transports, offices, veterinarian or malls among many others.

Technical Features

It combines a dual patented disinfection and purification technology through the generation of hydroxyl radicals $\text{OH}\cdot$ and the effect of photocatalysis.

Innovative active OH technology which disinfect through a chain reaction both the air and the surfaces. Through Advanced Oxidation Processes (POA) they reduces up to 99.9% of pathogenic microorganisms (viruses and bacteria), improve air quality (reducing volatile organic compounds and suspended particles) and eliminate odors

Kleenfan technology with photocatalytic disinfectant action fans. UV-A rays act on the titanium dioxide in the turbine generating Reactive Oxygen Species (ROS) that, through oxidation/reduction reactions, eliminate a wide range of organisms reducing them up to 99.9%.

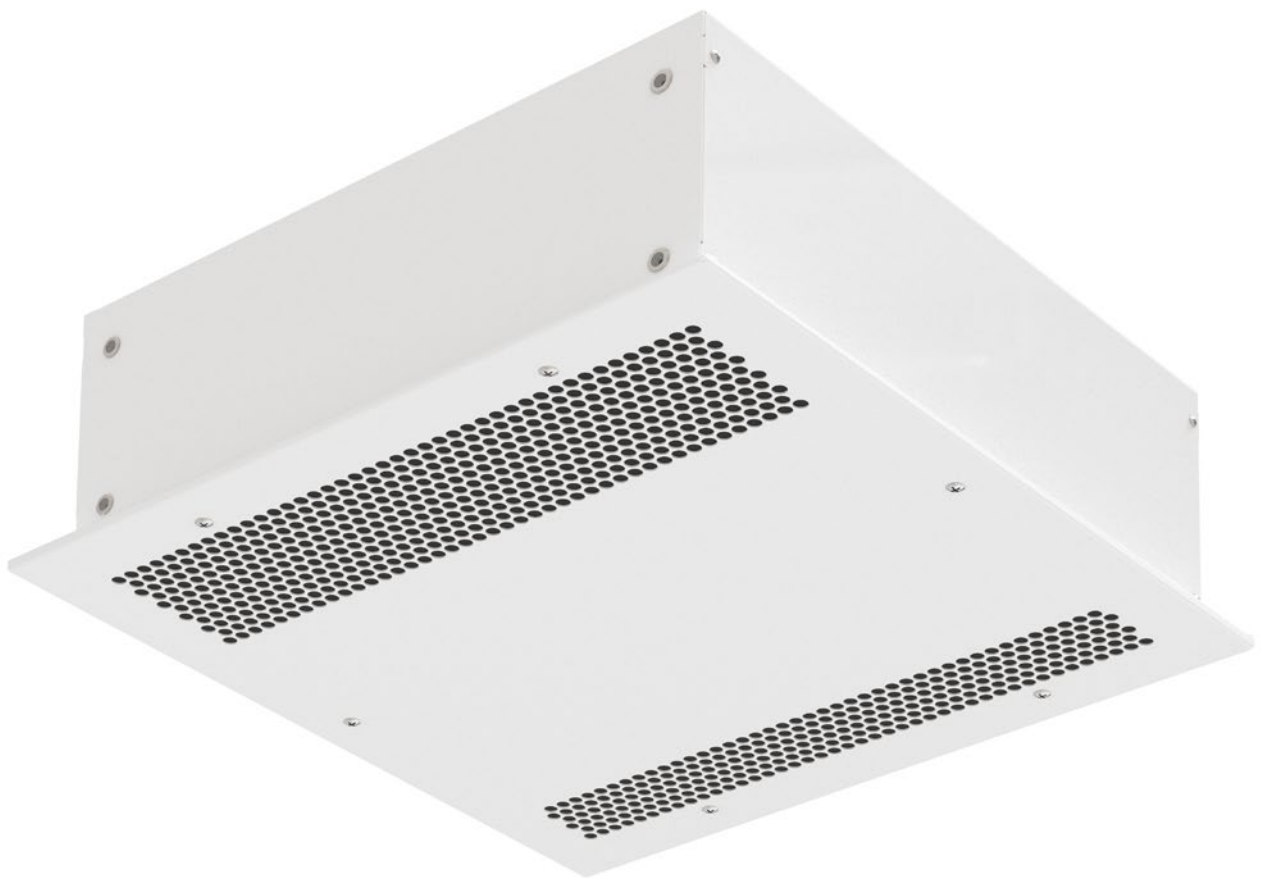
It mineralizes most of the pollutants present in urban areas produced by vehicles and industry (NO_x , SO_x , CO_x , formaldehydes, VOCs, etc.).

It includes a cartridge filled with a hydrogen peroxide solution.

Self-supporting casing construction made of galvanized steel plate.

Inlet grille (maintenance free) and discharge area integrated in a single galvanized steel tray, finished in structural epoxy-polyester painting white colour RAL9016 as standard. Other colours or stainless steel are available on request.

Tangential fan with "twisted" profile turbine of low-noise with 2-speed external rotor motor.





Airflow
(m³/h)

105/315



Consumption
(W/h)

33,4



Intensity
(A at 230V-50Hz)

0,17



Weight
(Kg)

16



Noise level
(dBA)

31-37

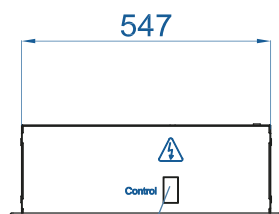
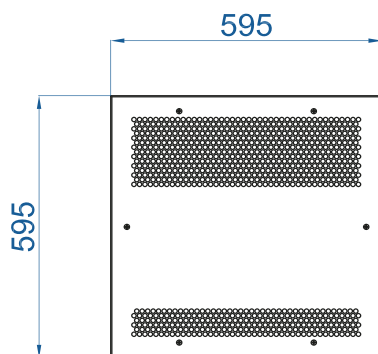


Range
(m³)

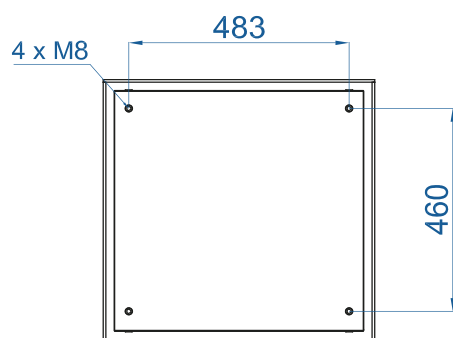
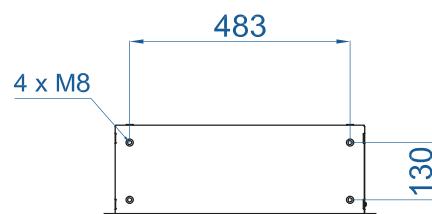
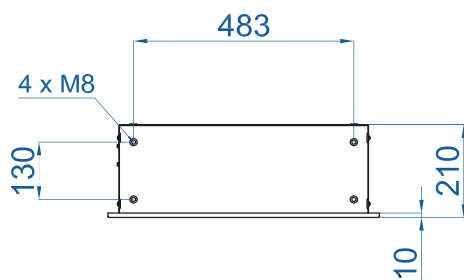
850

Dimensions

The device has a compact and pleasing design with overall dimensions of 595 x 595 x 210 (mm).



Electrical
connections



Control

It includes basic control Plug&Play with two regulation speeds.

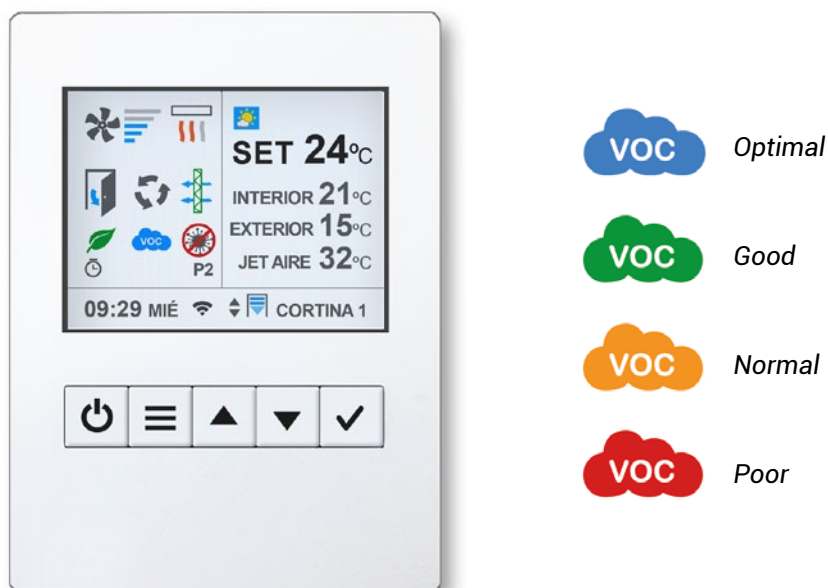


Optionally, the advanced Clever Control with air quality sensor can also be installed.

Disinfection function: The TFT display of the Clever control unit indicates with an icon that disinfection is active and running.

ON mode: disinfection activated while the K7 unit is running.

24h mode: disinfection activated 24 hours a day. When the K7 unit is OFF, the ventilation continues to run at a programmed minimum speed.



This extra disinfection function is compatible with all standard K7 programmes of the Clever control.

Disinfection activated: the light flashes when the empty cartridge alarm is active (no liquid).

Air quality: Continuous monitoring of air quality by a VOC sensor. Indicates air quality status with 4 colours.

Cartridge alarm: The level of the biocide cartridge is monitored by a sensor that will alert when the cartridge runs out of liquid for replacement. The disinfection icon will flash on the TFT screen of the Clever control indicating that the cartridge needs to be replaced. Inside the unit there is also a red LED indicator which will light up when the new cartridge is replaced.



The cartridge only needs to be changed every 3 months. The level of the cartridge is controlled by a sensor that will warn when the liquid runs out so that it can be replaced.

Additional Information

One of the technologies of the disinfection device is implemented with an ultraviolet ray emitting LED which, as it is inserted inside the housing of the unit and uses low intensity powers, is completely harmless to humans, because its incidence is not direct on living beings, but on the titanium dioxide coated fan.

According to UNE-EN 12198 the K7 is classified as category 0 but for the information of users and maintenance team its been identified with category 1 label.

Classification of machinery according to emission levels (UNE-EN 12198)

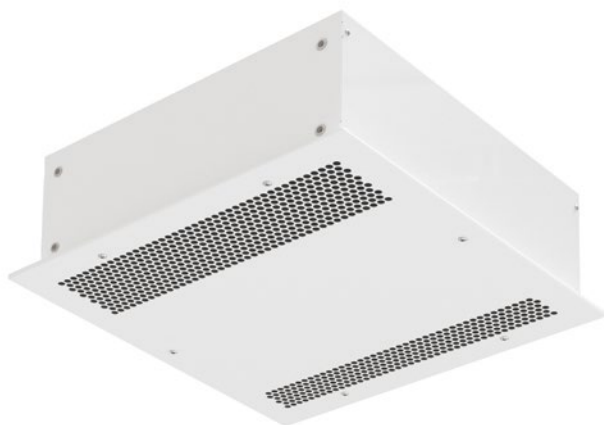
Category	Restrictions and security measures	Information and training
0	No restrictions	No information required
1	Restrictions: limited access, security measures may be necessary.	Information on hazards, risks and side effects
2	Special restrictions and essential security measures	Information on hazards, risks and side-effects; training may be needed

Source: Spanish Normalization UNE-EN 12198

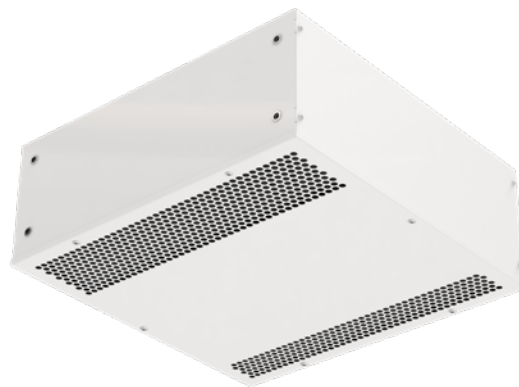


Optical radiation emission
Category 1
(EN 12198)

Installation



False ceiling grille (standard)



Visible installation grille

Cassette can be fitted with two grilles, the first has wings to blend in perfectly with the false ceiling, while the second does not protrude from the unit and allows for a nice installation.

Accessories



Rail supports



Silentblock brackets

This unit is thought for instalation in false ceiling. However, there is also the possibility to install it with the rail bracket or the silentblock bracket.



Interface Control

There is also the option of connecting it to the Interface to link it to a PLC.



Cassette K7 770 HEPA

K7 770 HEPA cleans and purifies the air thanks to three stages of filtration adapted to EN779 and EN1822 standards, the latter including H14 absolute filters with an efficiency of 99.995%.

The air recirculated through the G4, F7 and H14 filters retains viruses, bacteria, allergens, mould, odours and volatile organic compounds (VOCs) present in the environment, and returns to the interior free of polluting particles.

Technical Features

High-efficiency air purification and filtration unit with three stages of filtration:

- G4 (ZLM) pre-filter according to EN779 standard
- F7 intermediate filter according to EN779 standard
- H14 absolute filter with 99.995% efficiency according to EN1822 and sealed with polyurethane for 100% air filtration.

Continuous recirculation of the indoor air through the three filtration stages guarantees air purification by capturing particles and pollutants such as: dust, pollen, spores, bacteria, viruses and fine particles PM10, PM2.5 and PM1.

Self-supporting galvanised steel frame, prepared for recessed installation in false ceilings. Easy-access register panel for filter replacement.

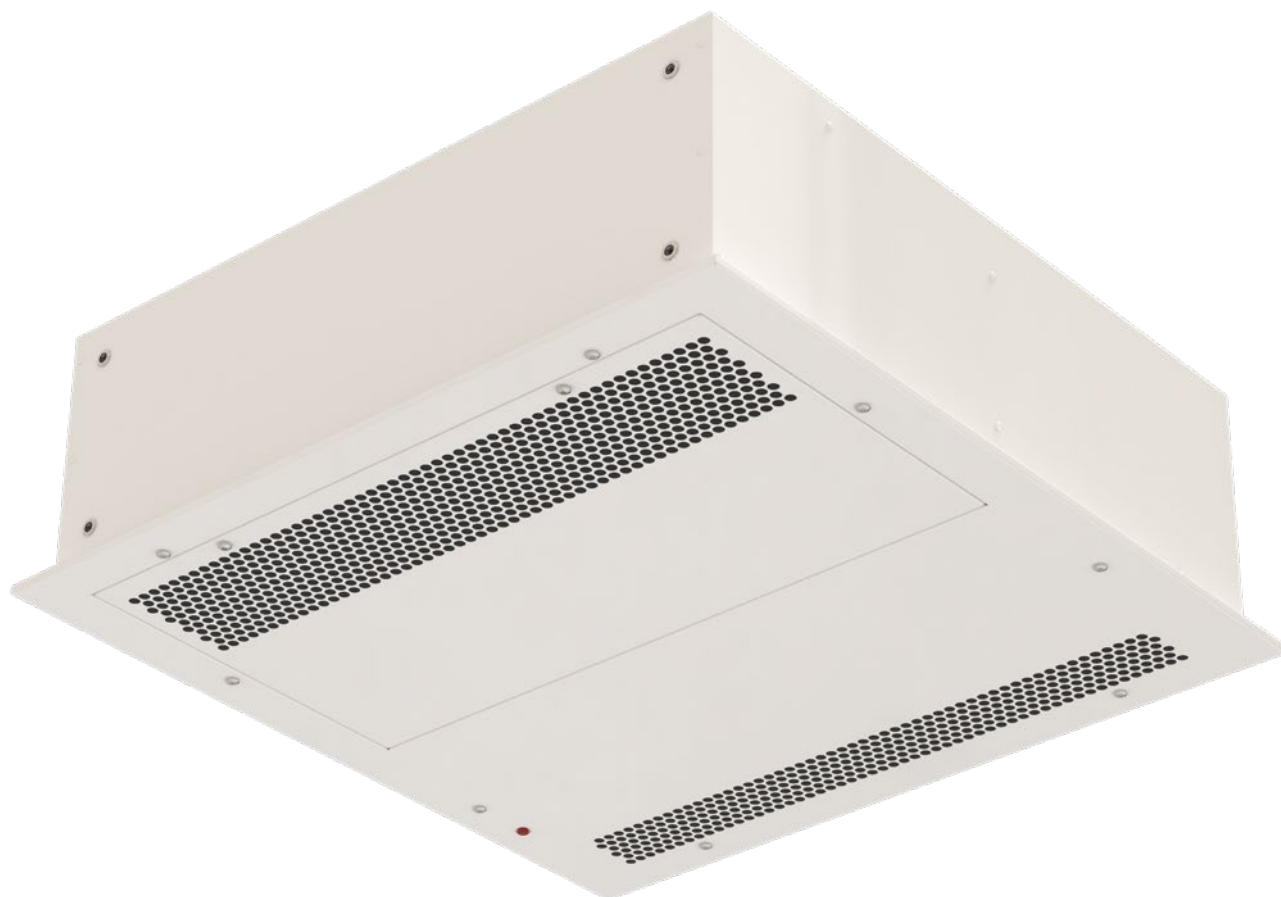
Suction and discharge grille (maintenance-free) integrated in a RAL9016-coloured frame. Other finishes available on request.

Centrifugal fan with external rotor EC motor with very low power consumption and noise level.

Constant flow rate up to 300 m³/h. The fan is self-regulating depending on the level of dirt in the filters to maintain the same flow rate at all times.

Visual indicator of dirty filter alarm by means of differential pressure switch.

Optional: ON/OFF control with constant flow regulation from 0 to 100%.





Airflow
(m³/h)

300



Consumption
(W/h)

61



Intensity
(A at 230V-50Hz)

0,9



Weight
(Kg)

32

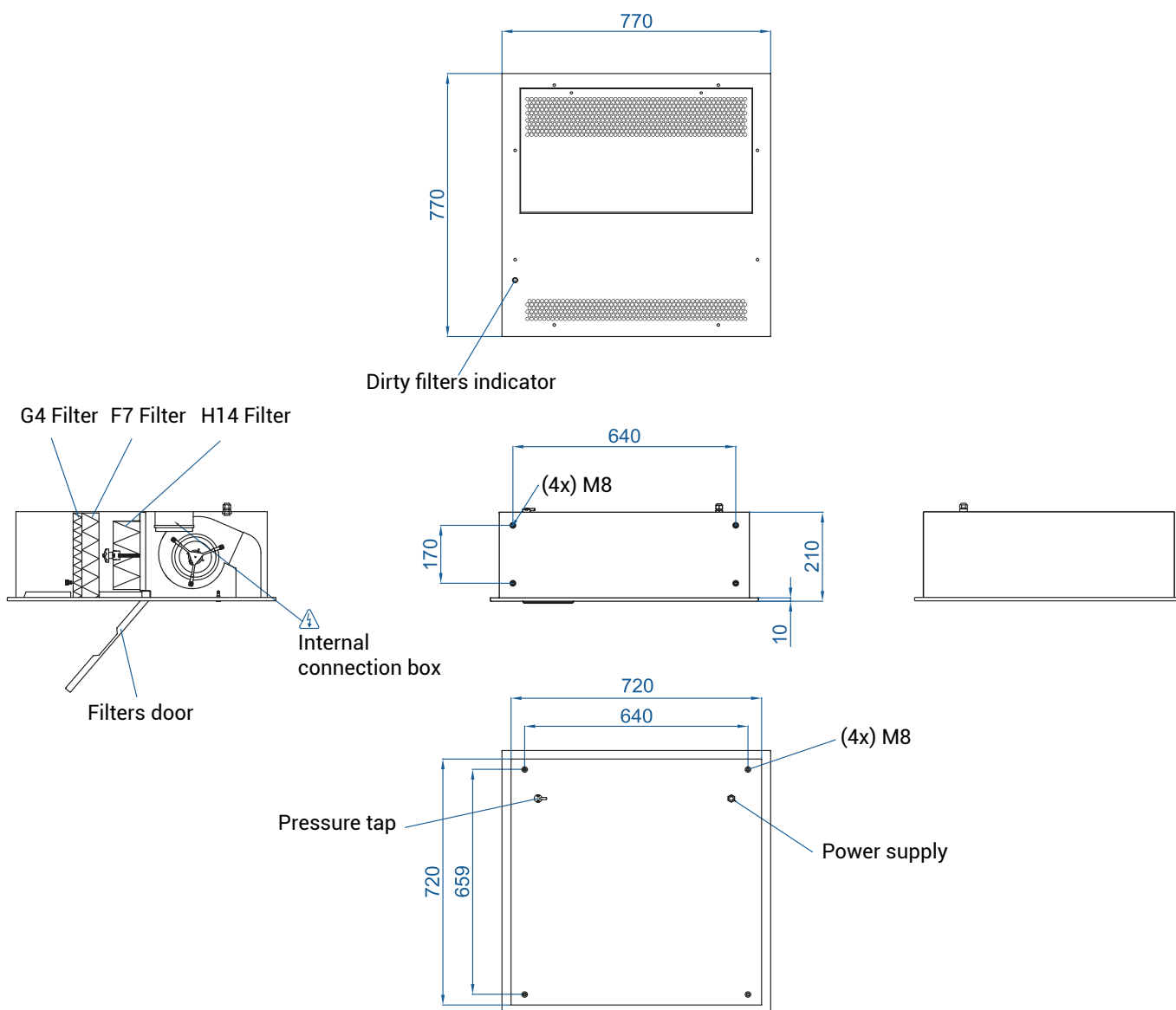


Noise level
(dBA)

55

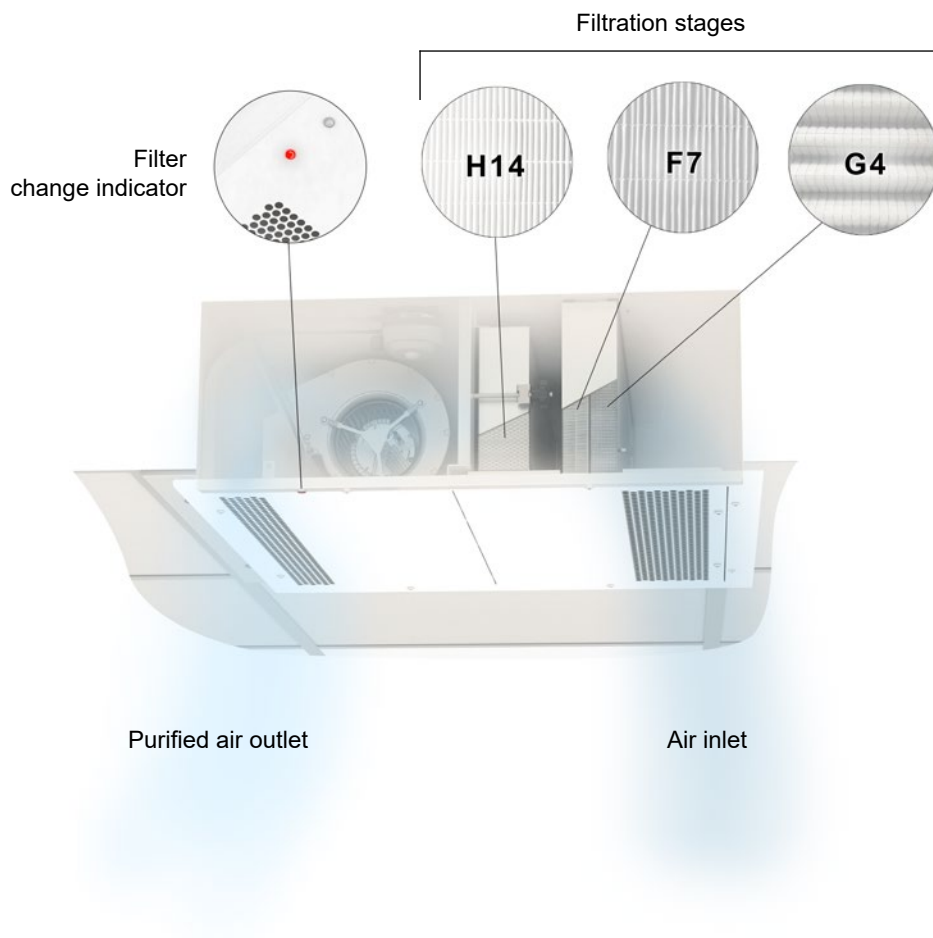
Dimensions

The device has a compact design with overall dimensions of 770 x 770 x 210 (mm).

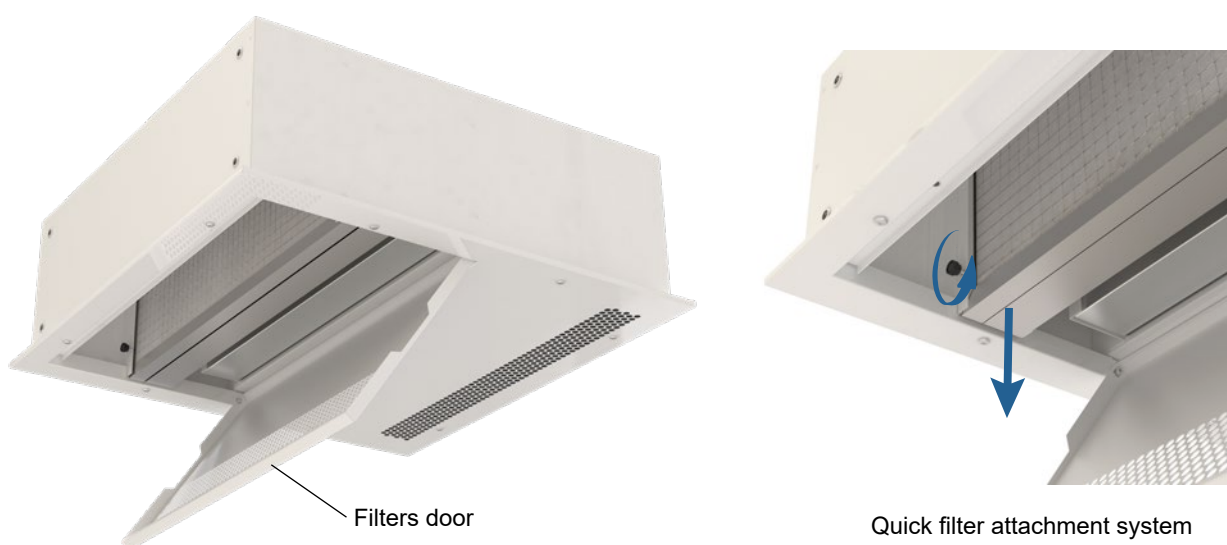


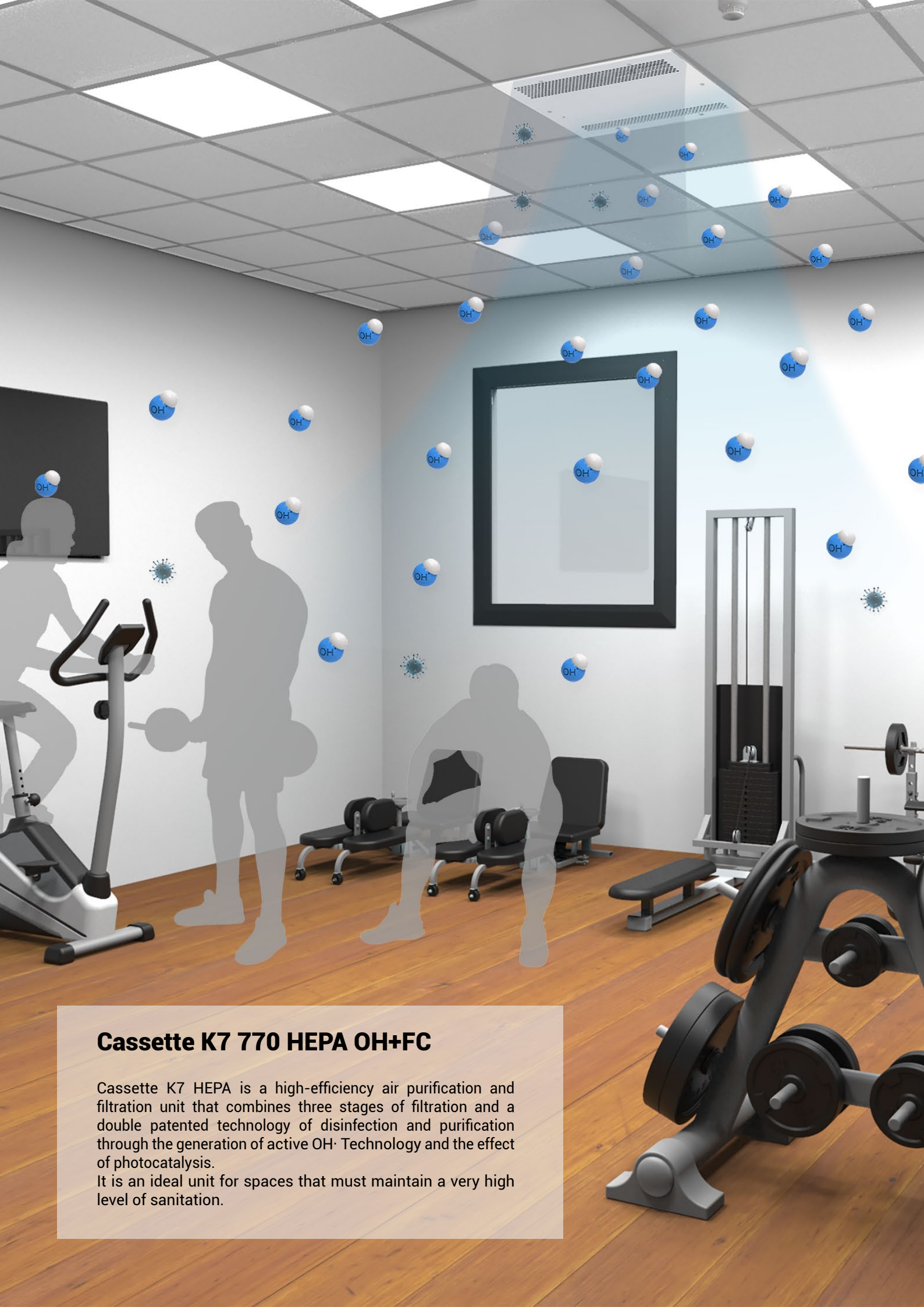
Functioning

The unit has 3 filtration stages: 2 pre-filters (G4 and F7) and an absolute filter (H14). The LED on the service panel indicates the filter change to be carried out to maintain the efficiency of the equipment.



Maintenance





Cassette K7 770 HEPA OH+FC

Cassette K7 HEPA is a high-efficiency air purification and filtration unit that combines three stages of filtration and a double patented technology of disinfection and purification through the generation of active $\text{OH}\cdot$ Technology and the effect of photocatalysis.

It is an ideal unit for spaces that must maintain a very high level of sanitation.

Technical Features

High-efficiency air purification and filtration unit with three stages of filtration:

- G4 (ZLM) pre-filter according to EN779 standard
- F7 intermediate filter according to EN779 standard
- H14 absolute filter with 99.995% efficiency according to EN1822 and sealed with polyurethane for 100% air filtration.

Innovative active OH technology which disinfect through a chain reaction both the air and the surfaces. Through Advanced Oxidation Processes (POA) they reduces up to 99.9% of pathogenic microorganisms (viruses and bacteria), improve air quality (reducing volatile organic compounds and suspended particles) and eliminate odors.

Kleenfan technology with photocatalytic disinfectant action fans. UV-A rays act on the titanium dioxide in the turbine generating Reactive Oxygen Species (ROS) that, through oxidation/reduction reactions, eliminate a wide range of organisms reducing them up to 99.9%.

Continuous recirculation of the indoor air through the three filtration stages guarantees air purification by capturing particles and pollutants such as: dust, pollen, spores, bacteria, viruses and fine particles PM10, PM2.5 and PM1.

It includes a cartridge filled with a hydrogen peroxide solution.

Self-supporting galvanised steel frame, prepared for recessed installation in false ceilings. Easy-access register panel for filter replacement. Easy to install and maintain, it does not have to be included in the ventilation system and can be installed in false ceilings or suspended with anchoring systems.

Suction and discharge grille (maintenance-free) integrated in a RAL9016-coloured frame. Other finishes available on request.

Double inlet centrifugal fan with EC external rotor motor with low noise level and very low consumption. Self-regulation to keep the air flow constant at 300 m³/h.

Double visual dirty filter alarm indicator by means of a differential pressure switch and empty cartridge detection.

Optional: ON/OFF control with constant flow regulation from 0 to 100%.





Airflow
(m³/h)

300



Consumption
(W/h)

61



Intensity
(A at 230V-50Hz)

0,9



Weight
(Kg)

32



Noise level
(dBA)

55

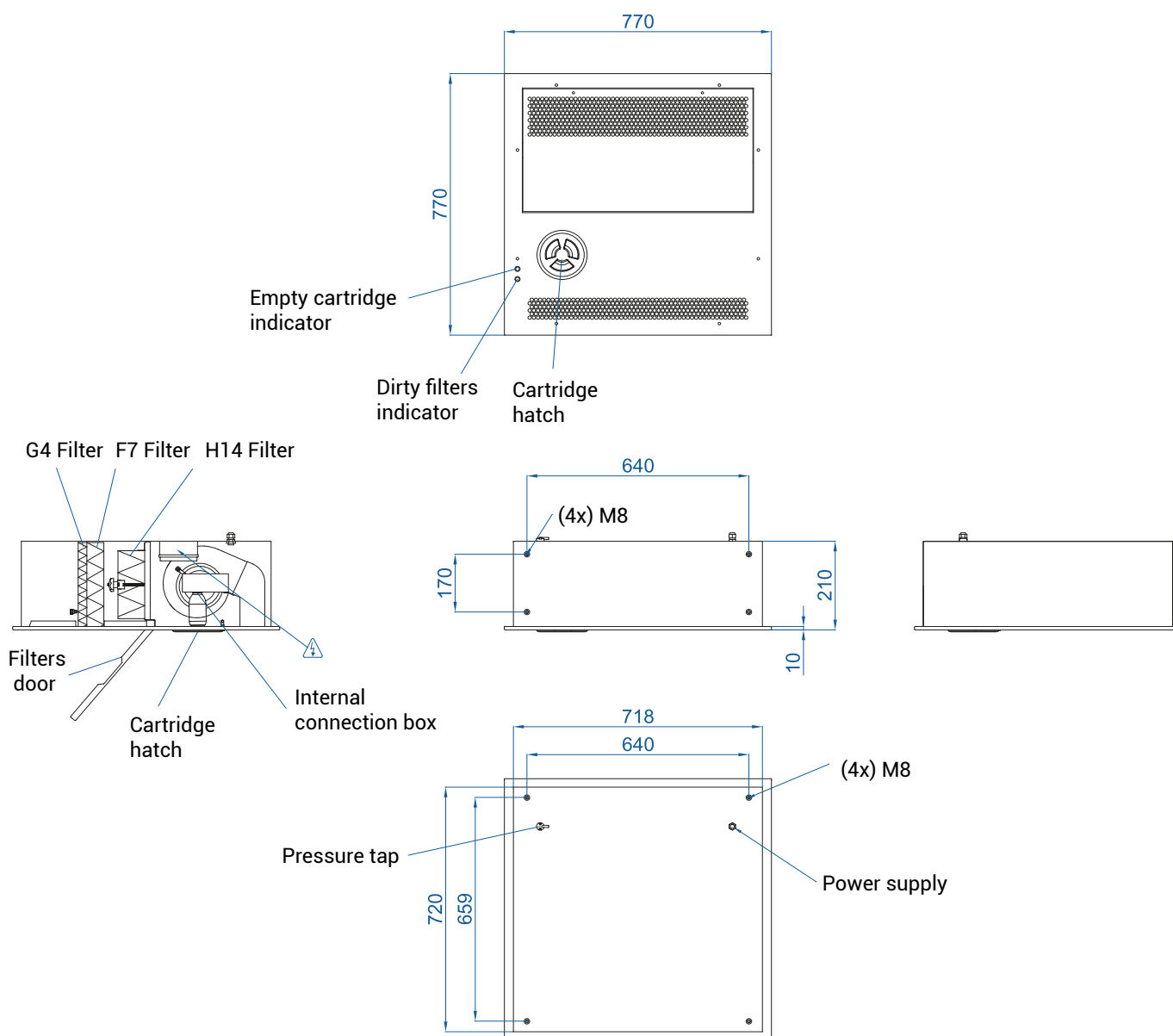


Range
(m³)

850

Dimensions

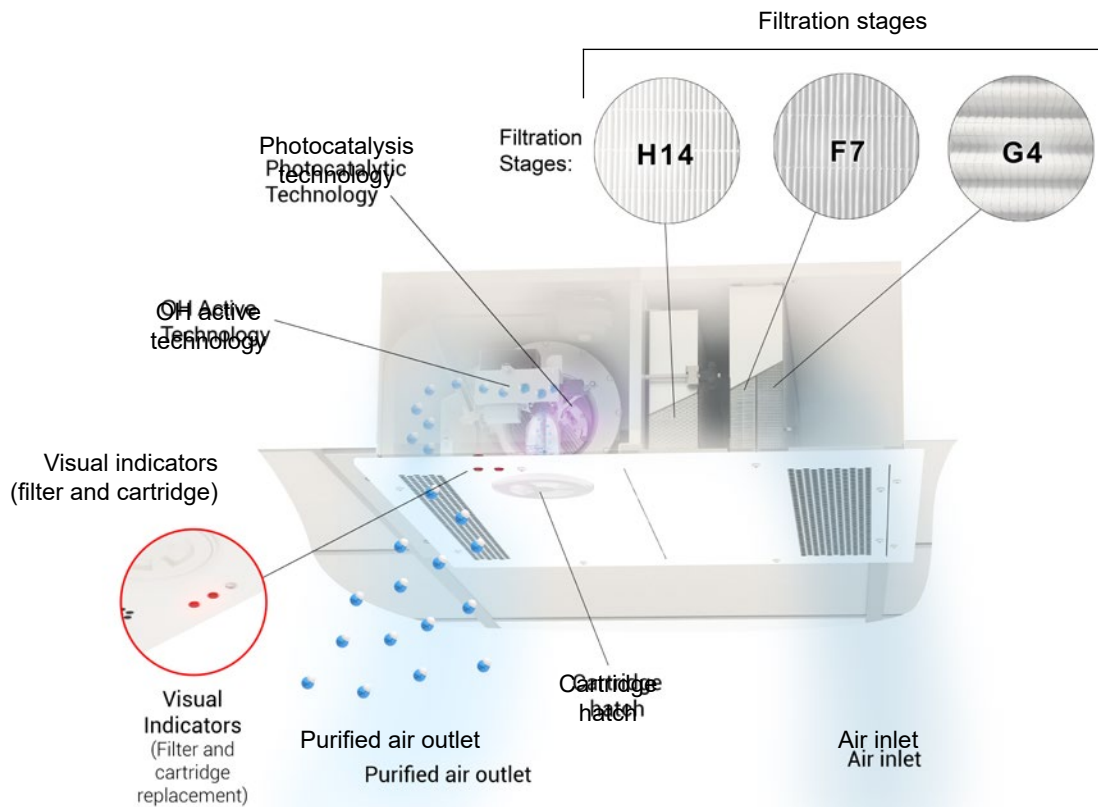
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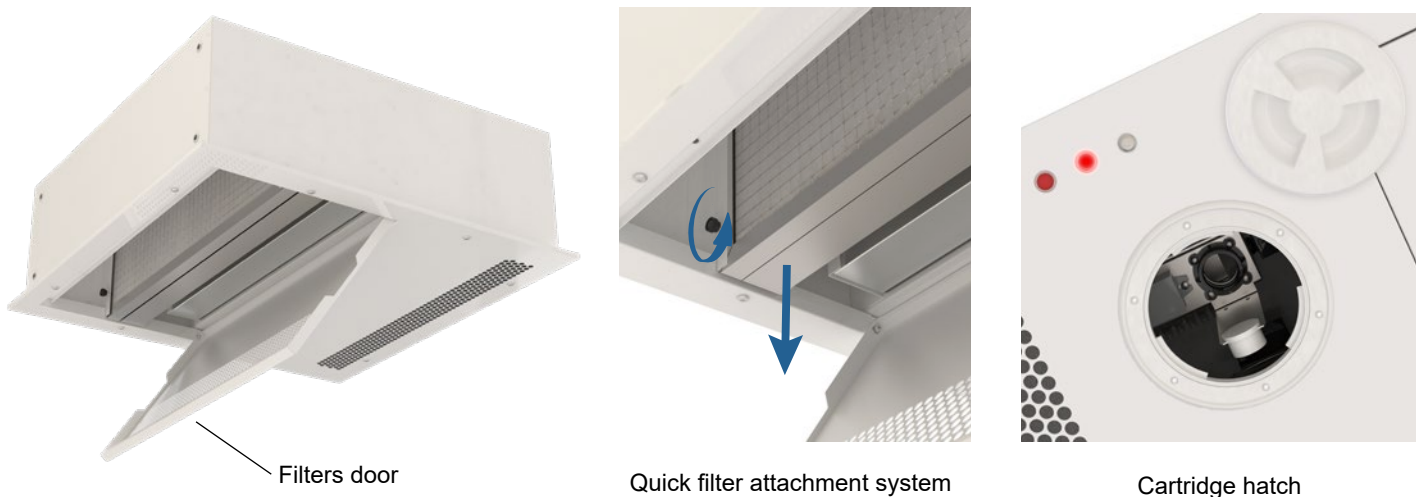
Functioning

Three air and surface purification and disinfection systems in a single unit. Air recirculation through a HEPA filter and expansion of hydroxyls thanks to active OH technology and photocatalysis fan guarantee a space free of pathogens and other volatile organic compounds that pollute indoor air.

The LED on the service panel indicates either the filter or cartridge change to be carried out to maintain the efficiency of the equipment.



Maintenance





The cartridge only needs to be changed every 3 months. The level of the cartridge is controlled by a sensor that will warn when the liquid runs out so that it can be replaced.

Additional Information

One of the technologies of the disinfection device is implemented with an ultraviolet ray emitting LED which, as it is inserted inside the housing of the unit and uses low intensity powers, is completely harmless to humans, because its incidence is not direct on living beings, but on the titanium dioxide coated fan.

According to UNE-EN 12198 the K7 is classified as category 0 but for the information of users and maintenance team its been identified with category 1 label.

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Source: Spanish Normalization UNE-EN 12198



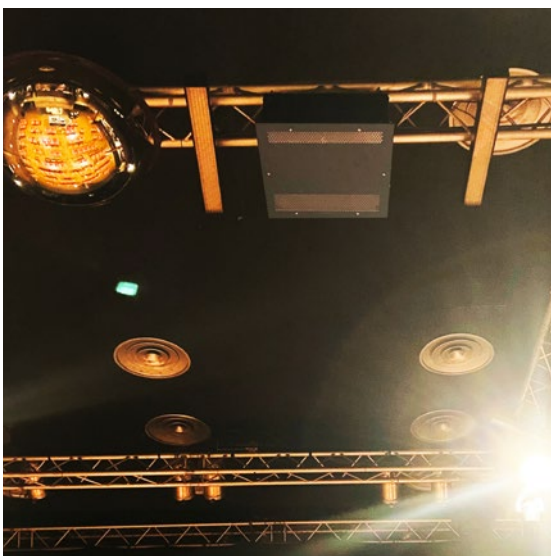
Optical radiation emission
Category 1
(EN 12198)



K7 600
Fitness Club



K7 600
Logistic Company Sales Office



K770
Concert Hall



K770
Public Administration Building

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DESCAT03326 2023R1 (02/02)
We reserve the right to modify design and specifications without prior notice.

