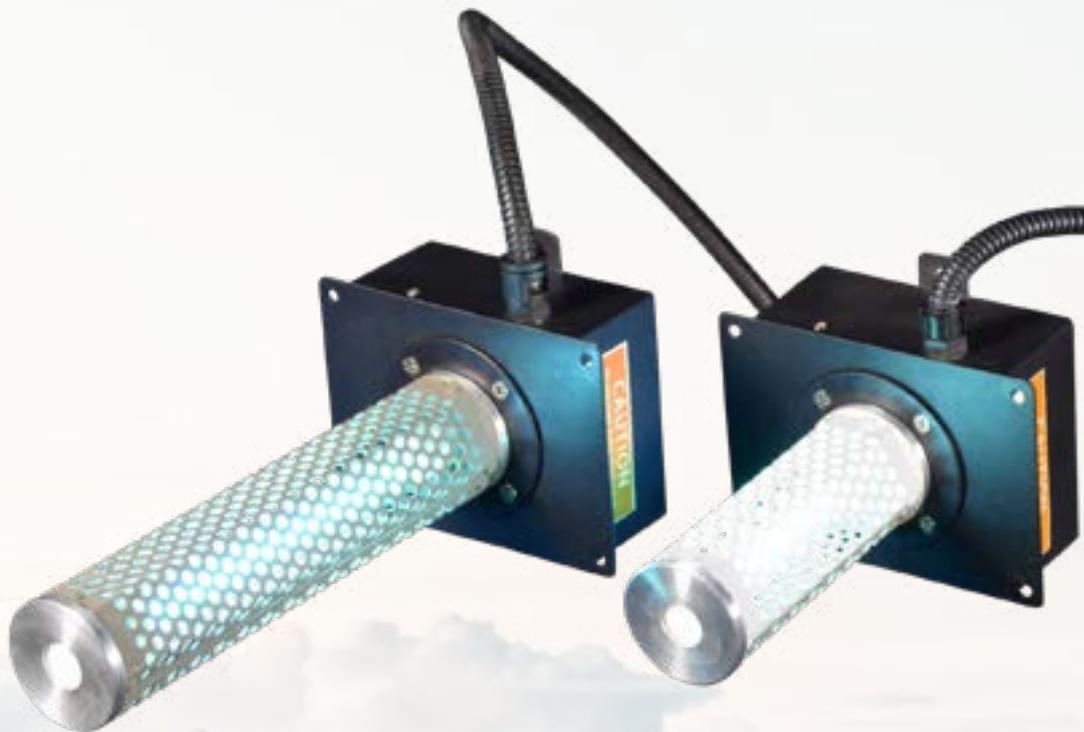




SNE[®]

Super Air Purifier

SNE CAP H- and V-versions



Multi-photocatalytic air cleaning systems
for mounting in air handling systems

Effective against bacteria, viruses, fungi and germs



Elimination of micro-organisms and odors for a pleasant and healthy indoor climate

In order to provide spaces with fresh, cool or warm air, many buildings are equipped with an air treatment system, in which air is extracted from the individual spaces and, if desired, it is cooled, heated and (partially) refreshed and redistributed throughout the building.

These systems thus ensure a pleasant indoor climate and are barely or not perceptible to the people present in the building.

However, the conditions in these systems are often ideal for the growth of microorganisms and if a source is present in one room, it will spread throughout the property. The dark, dusty and humid conditions in the air ducts are an ideal breeding ground for the growth of bacteria, viruses and fungi. Filters in air handling systems are not fine enough to stop micro-organisms and will not stop odors or volatile substances, in fact; filters will start to spread unpleasant odors themselves over time.

The SNE CAP devices use UV/photocatalytic technology to eliminate micro-organisms. By using ultraviolet light in combination with photocatalyst, the micro-organisms in the air are killed and odors and volatile compounds are oxidized. By using multiple photocatalytic materials, the effectiveness against various contaminants is increased. These applied technologies (MCI) have been developed and patented by SNE itself.

The optimal placement in an air ventilation system is on the intake side where the air to be recirculated is drawn from the rooms, in this way micro-organisms, volatile substances and odors are neutralized before they are circulated through the air treatment system. But the device can also be used in other places and in other types of air treatment systems for effective air purification.

The SNE CAP devices are easy to install and can be installed inside or partially outside the air duct. Making a few holes and connecting the power supply (220V) is sufficient to start using the device.

In addition to use in air circulation systems, the SNE CAP devices are also suitable for installation in professional air purifiers, drying cabinets and ventilation systems.

The SNE-CAP models are available in 2 versions

CAP-H, these models have been developed for use in air ducts with the focus on the recirculation ducts that draw the air from the rooms for recirculation through the air handling unit. These models produce some ozone which, as the air travels some distance through the air ducts, breaks down again.

CAP-V, these models do not produce ozone and can therefore be mounted where the purified air is blown directly into the room, which can be in all kinds of situations, from HVAC system to air purifier or point extractor.

In addition to these 2 models, there is also a VBO series, these devices have been developed for application against odors and can be used in extraction installations (catering or industrial) or in a recirculating system for air disinfection where there are no people in the room at that time. present. Because these devices produce much more ozone, the VBO models are not intended for recirculation in locations where people are present. These VBO devices are available as CAP (single UV/photocatalytic cell) and FAP (two UV/photocatalytic cell) versions.

Overview of properties:

- UV Photocatalytic Air Purification for HVAC Systems
- Quick and easy to install in an air duct or air handling unit
- Available for HVAC systems with medium ozone, with high ozone for odor control and without ozone for professional air purifiers or air conditioners
- Effective against micro-organisms and volatile substances
- Fights viruses, bacteria and fungi
- Prevents the spread of germs in the office, commercial building, ship and/or offshore installation
- Photocatalysis to enhance the air-disinfecting effect of UV light
- Various versions available for different air volumes, applications and room sizes
- Air purification without filters
- Stable operation with a UV cell life of approx. 8,000 hours

The importance of air purification in air handling systems



An **HVAC (Heating Ventilation Air Conditioning)** air handling system in a building is similar to the respiratory system in the human body. The system provides the persons present in the building with treated air (heated, cooled or ventilated) just like the breathing system provides the blood circulation with oxygen. Both systems are indispensable when it comes to allowing the body or the inhabitants to function.

However, the conditions in the air ducts of the HVAC system can form a hotbed for many forms of pollution, the moist, dark conditions pose a large number of micro-organisms (bacteria, fungi, viruses, spores) able to survive and multiply, which in turn can produce different kinds of contaminants (unpleasant odors, volatile substances, bacteria and their excrement).

Building materials and interior elements such as furniture, paint, chipboard and carpet are especially like these relatively new are a source of volatile organic compounds (VOCs) such as formaldehyde, benzene, toluene and xylene.

The polluted air that is spread throughout the building as a result inevitably leads to health complaints and absenteeism, some examples of symptoms include:

- * Irritated airways
- * Spread of viruses such as flu
- * Irritated eyes/contact lenses
- * Headache
- * Greater susceptibility to colds and allergens
- * Fatigue
- * Difficulty concentrating

These health complaints related to the work or living environment are known as the Sick Building Syndrome.

The need for air purification

Just as the human respiratory system is equipped with air filtering, so must an HVAC system of a filter system. Filters are generally used for this, they are very effective in "sifting" from the air most of the airborne contaminants such as dust, fluff, larger pollen, hair and dander. Some of the larger micro-organisms are also captured.

However, most micro-organisms are not caught by the filters. The organisms (such as bacteria, fungi) that are collected are given the opportunity to multiply in the filter due to the large amount of nutrients that are also captured by the filter. This causes the filters to become hotbed of micro-organisms, a large part of which moves through the filter at some point and ends up in the air (such as gram-negative bacteria). The filters must be treated as a biological risk (biohazard) when replaced. The volatile substances pass through the filter and are not or hardly reduced.

Photocatalytic air purification for germ control

The alternative is an air cleaning system that actively oxidizes and sterilizes the contaminants in the air. Not only is the air that goes through the cleaning system cleaned, but oxidants are added that spread into the air and eliminate the contaminants there.

SNE developed the MCI air disinfection technology for application in the air ducts of air circulation systems such as air conditioning, air circulation and balanced ventilation systems. By applying ultraviolet light in combination with photocatalysis kills the microorganisms in the air and odors and volatile substances are oxidized. The applied technologies have been developed and patented by SNE itself.

The sterilizing effect of ultraviolet light

Ultraviolet light penetrates the cell wall of an organism and reacts there with the DNA of the organism. The C=C carbon compounds in the molecules of the organism are broken down. This leads to the death of the cells, which prevents the organism from growing or multiplying.

Optical catalysts are used in combination with the UV light, these are compositions of substances that, when UV light is shined on them as a result of a catalytic reaction, are gaseous hydrogen peroxide (H₂O₂), hydroxyl radicals (OH), negative ions (O³⁻), ozone ions (O₃) and superoxides (O₂⁻).

The emission of these oxidizers triggers an oxidation process in which bacteria, viruses, micro-organisms and fungi are oxidized, in this process the oxidizers are simultaneously oxidized to oxygen and hydrogen. The system is also effective against volatile substances such as formaldehyde, smoke and unpleasant odors. The contaminants and oxidizers balance each other, resulting in clean, pure, odor-free air.

The **SNE MCI system (Multi Catalytic Oxidation)** uses high-quality UV-C lamps of German manufacture (Heraeus), which, partly due to the use of quartz glass, have a 30 to 60 percent higher energy yield compared to conventional UV lamps of the same length. For the various applications, there is a choice between lamps that generate ozone (natural quartz, 184 and 254 nanometers), or lamps without ozone production (synthetic glass, only 254 nanometers).

Different types of optical catalysts produce different types of catalytic reactions and all have different benefits, the MCI system uses two different optical catalysts to combat a wide spectrum of contaminants more effectively.

The MCI induct air sterilizer program consists of various models of units, equipped with one or two UV lamps/optical catalysts (MCI cells) of various lengths, in combination with various applicable UV lamps (different strengths of ozone production or ozone-free), making it possible to put together a combination of technologies and devices for every possible circumstance (size of the property, number of people present, size/capacity HVAC system, etc.).

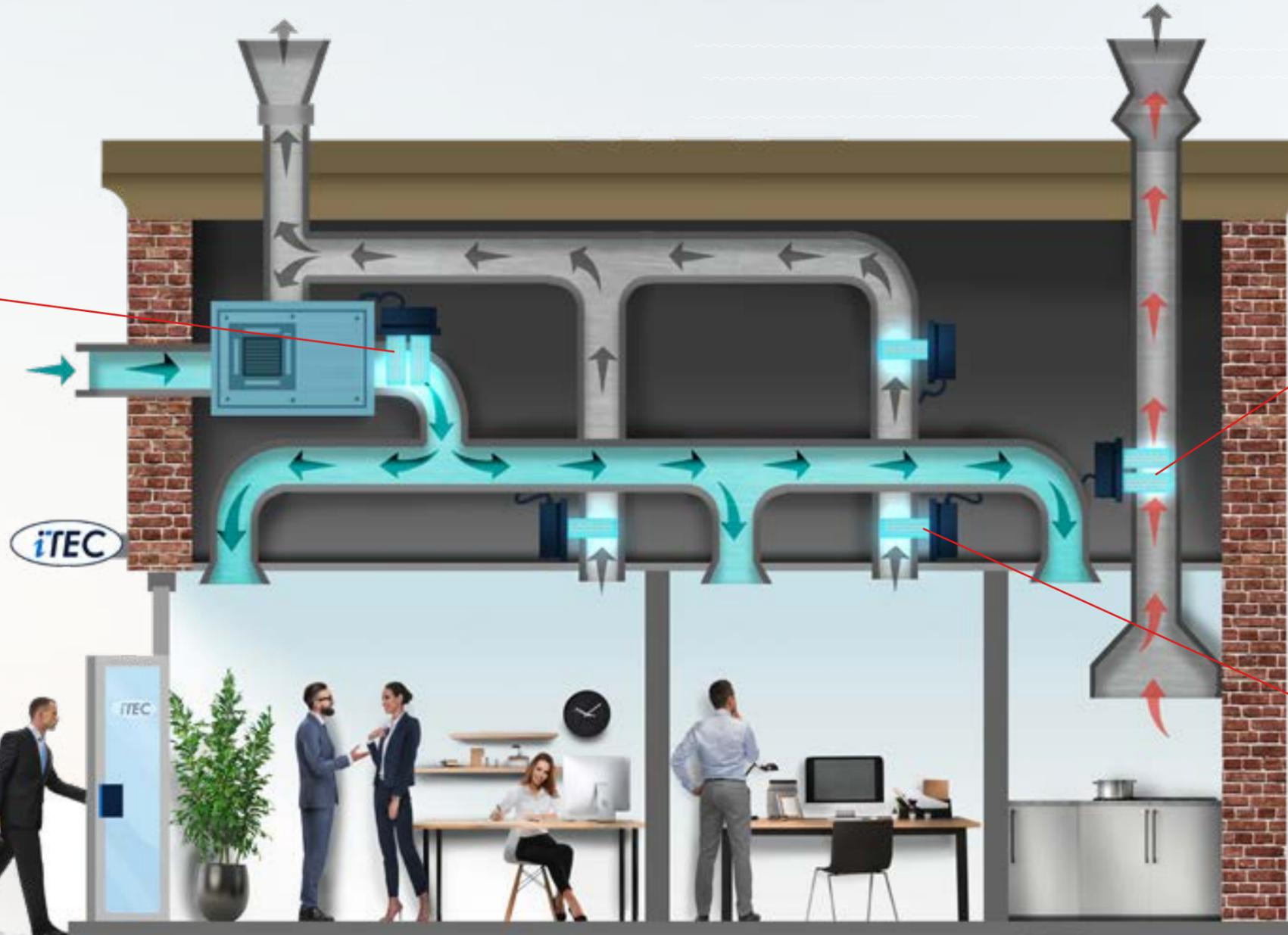


The SNE systems can be used in a variety of situations, below you can see an example of the most common application of the individual SNE devices in an air treatment system:



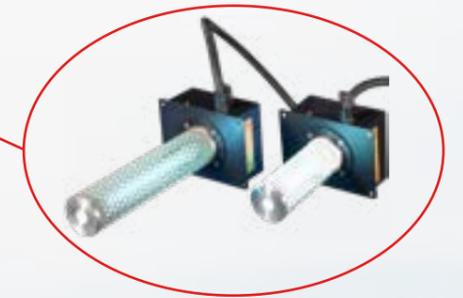
SNE FAP DF / DV

In or near an air handling unit to purify the air distributed throughout the building by the air handling system.



SNE CAP VBO / FAP VBO

In air ducts of exhaust systems to eliminate odors before they spread outside the property and can cause nuisance.



SNE CAP H- and V-versions

In the air recirculation extraction points to eliminate germs or micro-organisms present in individual rooms before they can enter the air handling system



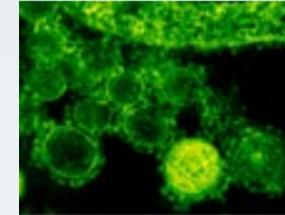
SNE CAP-H (production of some ozone)

Model	For floor space	For air transit	UV Cel	Wattage
CAP - 20H	10 - 20 m ²	400 - 600 m ³ /uur	1x 127 mm	<5W
CAP - 40H	20 - 40 m ²	600 - 800 m ³ /uur	1x 127 mm	<5W
CAP - 60H	40 - 60 m ²	800 - 1.000 m ³ /uur	1x 127 mm	<5W
CAP - 80H	60 - 80 m ²	1.000 - 2.000 m ³ /uur	1x 127 mm	<5W
CAP - 100H	60 - 120 m ²	1.000 - 3.000 m ³ /uur	1x 212 mm	<9W
CAP - 100Hz	80 - 150 m ²	2.000 - 4.000 m ³ /uur	1x 287 mm	<12W

SNE CAP-V (ozone-free)

Model	For floor space	For air transit	UV Cel	Wattage
CAP - 80V	40 - 60 m ²	100 - 1.000 m ³ /uur	1x 127 mm	<5W
CAP - 100V	60 - 120 m ²	100 - 3.000 m ³ /uur	1x 212 mm	<9W
CAP - 100HV	60 - 150 m ²	100 - 4.000 m ³ /uur	1x 287 mm	<12W

Effective against bacteria, viruses, fungi and volatile substances



Bacteria

Staphylococcus Aureus (MRSA)
Methicillin Resistent
Streptococcus Spp
Pseudomonas Sp
Listeria
Escherichia coli
Bacillus spp



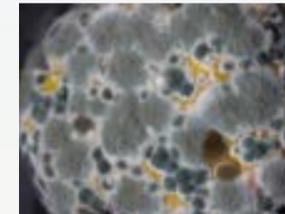
Viruses

Bird Flu (Avian Flu virus)
Sars virus
H1N1
Norwalk virus



Volatile Compounds

Formaldehyde
Xylene/Toluene
benzene
Trichloroethylene
Chloroform
Ammonia
Alcohols
Acetone



Fungi

Strachybotrys chartarum
Candida albicans



Pollen/Particles

Allergens
(Ultra-) particulate matter
pollen



Smoke



Scents



EUROPE

AMERICA

ASIA

Fuchs Umwelttechnik (industrial air purification)



LeBlanc & Associates LLC, Los Angeles USA



Metamount Schweiz AG (Agrochemicals)



Oleg Strashnov (heavy lift vessel)



Thyssenkrupp materials (lift installations)



Coca-Cola Beverages Shanghai Co Ltd



MGM Hotel, Macau



Chang Sha Huanghua International Airport



Macau University of Science and Technology Hospital



Galaxy Entertain Group, Macau



Nokia Siemens Networks Shanghai Ltd.



Grand Hyatt Hotel, Macau



Ritz-Carlton Hotel Central Hong Kong



Hong Kong Bank of China Centre



Thomson Reuters, Shanghai Office



Mitsubishi Elevator Hong Kong



TsimShaShui Plaza, Hong Kong



Mitsubishi Elevator Co.,Ltd, Shanghai/Hong Kong



Venetian Resort Hotel, Macau



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