UV STERIL AIR SYSTEM

THE MOST EFFECTIVE MEANS OF
DESTROYING ALL
TYPES OF MICRO-ORGANISMS
PRESENT IN THE AIR

KOVER SYNERGY

AIR GERM UV
SPECTRAL UV
LIGHT ENERGY UV

KOVER S.r.l.
SYNERGY

UV STERIL AIR SYSTEM

AIR GERM UV cod 11200

TECHNICAL SPECIFICATIONS

• Rated voltage	230v 50Hz
• Consumption	70W
• Level of air purification	92%
• Range	56 mc/h
• Noise level	29 dB
• Installation	Vertical wall mounting
• Operation	continuous
• External UV-C emission	none
• Danger level	none
• Equipment	• pre-filter in the air intake
• Life of UV-C tubes	3000 hours
• Air nozzles	fixed
• Casing	in aluminium
• Lamp switch	anti UV-C glass
• Lamps	2x6w – T5 UVC tubes
• Wavelength	254 nm
• Colour	Ral 9010
• Weight	Kg.3,5
• Dimensions	45x18x8 cm
• Dimensions of packaging	50x19x9 cm
• Volume	0.008 cu. m.

SPECTRAL UV cod 11201

TECHNICAL SPECIFICATIONS

• Rated voltage	230V 50Hz
• Consumption	66W
• Level of air purification	92%
• Range	100 mc/h
• Noise level	29 Db
• Installation	Vertical/horizontal wall mounting.
• Operation	continuous
• External UV-C emission	none
• Danger level	none
• Equipment	• pre-filter in the air intake
• Life of UV-C tubes	6000 hours
• Air nozzles	adjustable
• Casing	aluminium
• Lamp switch	anti UV-C glass
• Lamps	2x15w – T8 UVC tubes
• Wavelenght	254 nm
• Colour	Ral 9010
• Weight	Kg. 5
• Dimensions	100x18x8 cm
• Dimensions of packaging	105x19x9 cm
• Volume	0.017 cu. m.

SPECTRAL UV cod 11202

TECHNICAL SPECIFICATIONS

• Equipment	• electronic timer for tube substitution

SPECTRAL UV cod 11203

TECHNICAL SPECIFICATIONS

• Equipment	• electronic timer • remote control with on/off switch

SPECTRAL UV cod 11204

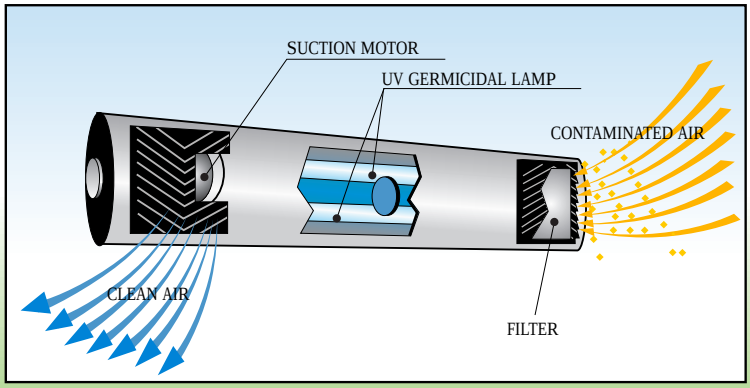
TECHNICAL SPECIFICATIONS

• Equipment	• electronic timer • remote control with on/off switch • air ioniser

APPLICATIONS

The Germicidal Lamps for general air sanitization can be used in:

- hospitals
- operating rooms
- emergency rooms
- dental laboratories
- dentists' offices
- doctors' offices
- vetrinary offices
- pharmaceutical industry
- breeding farms
- areas for food and drink production
- food laboratories
- refrigerator cells
- esthetic institutes
- homes
- offices
- air-conditioned areas
- etc



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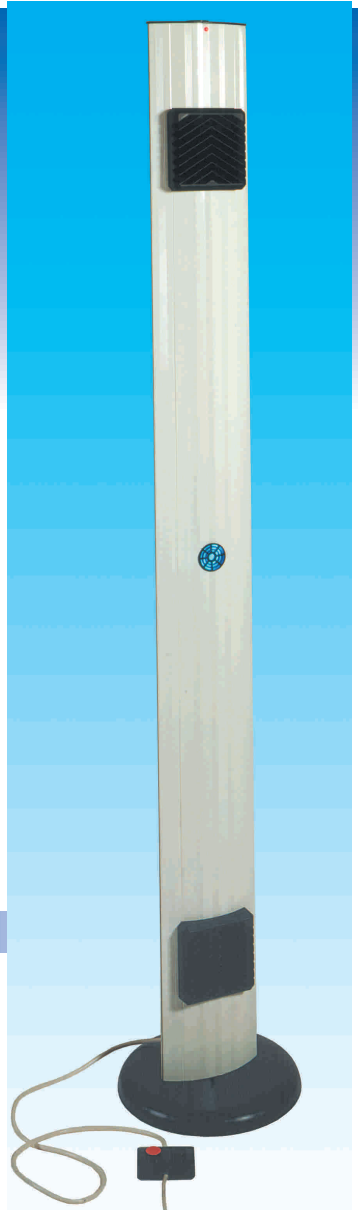
Air Ioniser



Remote Control

LIGHT ENERGY UV cod.11205

TECHNICAL SPECIFICATIONS

• Rated voltage	230V 50 Hz
• Consumption	110 W
• Level of air purification	92%
• Range	100 mc/h
• Noise level	29 dB
• Installation	self - standing
• Operation	continuous
• External UV-C emission	none
• Danger level	none
• Equipment	• pre-filter in the air intake • negative ionizer system
• Life of UV-C tubes	6000 hours
• Air nozzles	adjustable
• Casing	in aluminium
• Lamp switch	anti UV-C glass
• Lamps	2x30 W UV-C tubes
• Wavelenght	254 nm
• Colour	ral 9010 metallic dark grey code 11207
• Weight	13 kg.
• Dimensions	180x18x8 cm
• Dimensions of packaging	185x19x9 cm
• Volume	0.031 cu. m.

LIGHT ENERGY UV cod 11206

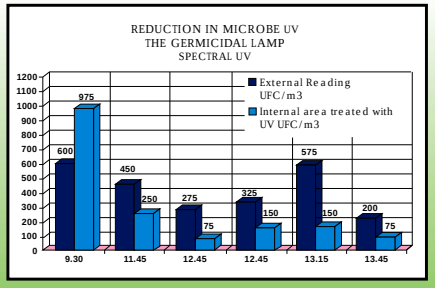
TECHNICAL SPECIFICATIONS

• Equipment	• electronic timer for tube substitution • remote control with on/off switch

MICROBIOLOGICAL ANALYSIS

Figure 1 compares data relating to the levels of pollution on the outside with levels inside a waste disposal room. The latter was used to provide an extreme example of polluted air. Values of outside air pollution were measured in order to take into account their influence on levels of internal air pollution.

figure 1



levels were recorded at 9.30 a.m. The first sample was taken at 11.45, after the lamp had been installed. There is a notable reduction in the number of air-borne micro-organisms present.
Calculations based on the number of external air-borne micro-organisms show that this reduction is in the order of 50%.Final results demonstrate a radical change in the number of microbes present when compared to initial levels.
Before using the SPECTRAL UV lamp, the level of microbes present inside was higher than levels outside. After using the lamp, the level of pollution inside was virtually negligible.

Another important test was run by taking samples from the area around the air intakes and the air nozzles, from which clean air flowed outwards (see fig. 2). As is clear from the data obtained, the level of microbe pollution was much higher in samples of untreated air than in the air flowing out of the nozzles.

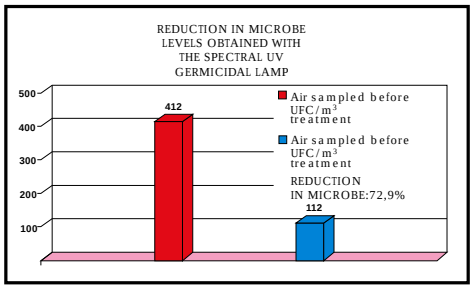


figure 2

MICROBE LEVELS REDUCED BY 72.9%
It seems clear, then, that the SPECTRAL UV germicidal lamp is a real help in combating and eliminating air-borne micro-organisms.

In order to test the ability of the lamp to render air hygienic, a room measuring 70 cu. m. was sprayed with *Bacillus Subtilis*.
A series of air samples were then taken over a period of time to test the level of microbe pollution in the air. The air was sampled using an S.A.S. system both before and after the Spectral UV Germicidal Lamp was turned on. The results, as can be seen from Figure 3, show a drastic reduction in the levels of microbe pollution over this period, a clear demonstration of how effective this equipment is at destroying germs.

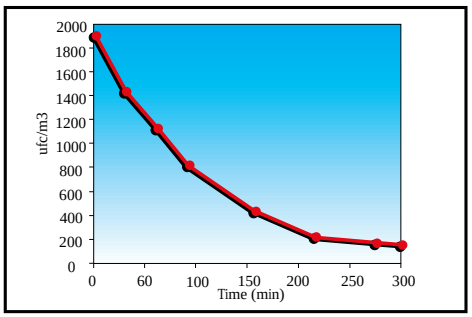


figure 3

ULTRAVIOLET RAYS

Ultraviolet is the name given to electromagnetic radiations with wave lenghts between 100 and 400, situated between the visible spectrum and x-rays. Ultraviolet rays are invisible and are commonly classified in three conventional bands:
- UV-A radiations (long waves) from 315 to 400nm.
- UV-B radiations (medium waves) from 280 to 315nm.
- UV-C radiations (short waves) from 100 to 280 nm.

(one nanometer corresponds to a millionth of a milimeter).
The most efficient artificial source of hight intensity UV-C rays are lamps which discharge mercury vapor at low pressure, and can supply homogeneous monochromatic radiation at 250-265 nm wave lenght. The fundamental UV-C radiation with the maximum germicidal effect is represented by the 254 nm spectral line (the point at which nucleic acids of micro-organisms have their maximum absorption).
The need for limiting the presence of pathogenic germs in the air has brought about increasing interest in the use of the short UV-C band of UV rays. UV-C ultraviolet rays are bactericidal by their physical nature. They act by producing the denaturation of the proteins in the bacteria or

the breakage of cell ways through mechanical action, provoking the death of the micro-organism (destruction of the DNA).
The case against this positive reduction of bacteria is the considerable danger of these rays which, if they come into contact with the skin and eyes, can cause rashes and conjunctivitis.
For this reason, normal lamps which exploit UV-C rays can be kept in operation only in the absence of persons, with the obvious reduction of their effectiveness over a period of time.

THE GREAT ADVANTAGE OF OUR SYSTEM IS ITS ABSOLUTE LACK OF DANGER (CERTIFIED) TO MAN, DUE TO THE FACT THAT THERE IS NO RADIATION LEAKAGE FROM THE UNIT.

MICRO-ORGANISMS

Micro-organism is the generic name given all organisms,of any system, which are not visible to the naked eye.
Micro-organisms include bacteria, moulds, protozoans, enzymes and viruses, and represent the lowest form of life.

BACTERIA

Bacteria, given their microscopic dimensions and low food and enviromental requirements, are the most widespread form of life. They are present everywhere:land water, air.
Their morphology is not very differentiated and their form is mainly spherical or rod-shaped.

MOULDS

Moulds are aerobes and require an atmosphere rich in oxygen in order to grow. Consequently they develop primarily on the surface of contaminated substratas.
Some are parasites of man, animals and plants, and can even cause serious damage.

VIRUSES

Viruses form a group of forced intracellular parasites. Viruses have been identified as the agents responsible for some of the diseases of man, animals, plants and bacteria themselves (bacteriophagism).

ALLERGENS

The attention given to what we eat and drink must also be given to the air around us. Dust contains viruses, bacteria, chemical pollutants and mites. All allergens responsible for respiratory problems are of minute dimensions, microns in size, and thus can remain suspended at length in invisible enviromental dust where we live.
Sneezing, stuffy nose, red watering eyes, difficult breathing and headaches are the typical signs of allergies from both pollen and dust. The fact that the feces of mites are rich in allergens has moved the attention of researchers from the mites themselves to their excrements and has posed the problem of determining the allergenic power of micro-environments. In fact both mites and their debris are rarely present in suspended air, but particles of their feces are abundant.
During normal breathing these particles present in the air are inhaled and enter deeply into the lungs and bronchial tubes.
There exists a correlation between the level of airbound allergens inhaled and the incidence of allergic manifestations. Taking preventive action with the GERMICIDAL LAMPS is fundamental.

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WHAT ARE IONS

In order to understand what an ion is, one must go back to the last constituents of matter. The constituents of solid, liquid and gaseous matter are molecules, which are themselves constituted of atoms. Each atom of any chemical element is made up of smaller electrically charged particles.
Under normal conditions, an atom appears electronically neutral, because the total negative charge of electrons and the positive charge of the nucleus neutralize each other exactly. It can happen that an atom, or a molecule or a fragment of molecule can lose or gain one or more electrons with respect to those it has when it is neutral.
These charged bodies are called ions. Thus, the ionization is a necessary step to extract an electron from the external orbit of the atom and this is possible when energy is supplied.

WHAT IS IONIZATION OF AIR

It is the name given those molecules of air when they are associated with an electrical charge, be it positive or negative.
This effect is at its maximum in mountain air, where the quantity of ionized air particles is more than 4000 per cm3. It must be understood that in a cm3 there are in total more than 2 millions of millions of particles of which only a minimal part is ionized.
This small part of particles is that which has a fundamental influence in the life of the living beings, animal and plants, and in particular of man. From the distribution of the positive or negative charge can depend the health, growth, operative efficiency of many living beings.

HOW IS NEGATIVE IONIZATION PRODUCED

Technically, great quantities of negative ions can be produced by applying the physical principle of bringing a pin point to an elevated potential, until a spontaneous emission of electrons (also called crown effect) is obtained. This principle, in concept very simple, requires a certain accuracy in realization.
The equipment, in order to be able to function for long periods of time under high tension, must be studied with particular attention to the choice of components, design and electrical connections.

WHAT HAPPENS WITH AIR IONIZERS

The electrons emitted by the ionizer negatively charge the oxygen molecules and atmospheric nitrogen thus are formed negative ions. Molecules of the same sign repel each other and increase the deposit speed of the suspended particles, which, by electrostatic attraction, are drawn from the ground and from surfaces.
Therefore the physical phenomena which occurs is rather simple; it must be kept in mind that various factors, such as temperature, humidity,etc. can influence it.
Bacteria which is transmitted by way of air undergo a reduction, since they are usually aggregated to dust particles to form large positive ions, The same happens to odours constituted by gaeous molecules.
To summarize, the air ionizers serve a double action:
1)They increase the speed of cigarette smoke deposit and of atmospheric dust to which polluting substances can be aggregated, thus determining a real and proper cleansing of the air.
2) They restore in confined and stagnant air a natural ionic equilibrium, generating negative vital ions, equal to those given by atmospheric phenomena.

UV STERIL AIR SYSTEM

Studied and produced with innovative design, it overcomes the problems of direct and indirect exposure to short-wave ultraviolet rays (UV-C 254 nm), offering risk-free continuous use even in the presence of persons.

PATENTED & CERTIFIED

THE MOST EFFECTIVE MEANS OF DESTROYING ALL TYPES OF MICRO-ORGANISMS PRESENT IN THE AIR

After careful study and technical environmental testing, a totally new Germicidal Lamp has been perfected.

AIR GERM UV
SPECTRAL UV
LIGHT ENERGY UV

Operation is based on a closed-cycle forced ventilation system. When air is taken in by the unit it passes through a mechanical filter at the entry valve where larger pollutants are blocked, thus avoiding dirtying the germicidal lamps.

The air is then forced into direct contact with mercury vapor tubes which emit UV-C rays, completing maximum germicidal action. A high power reflecting specular screen concentrates the UV-C radiation reflections.

The air speed is 0,1 meter/second and the volume of air treated is approx. 100 m^3/h.

The air is then expelled through the exit valve, micro-biologically clean.

THE GREATEST ADVANTAGE OF THIS SYSTEM IS ITS ABSOLUTE LACK OF DANGER TO MAN IN THAT THERE IS NO LEAKAGE OF UV-C RADIATIONS FROM THE UNIT.

It is therefore possible to carry out continuous and constant air sanitizing of any area, even during working hours, without prejudice to the health of personnel.

The effectiveness of the Germicidal Lamp and its safety have been checked by the University of Studies at Milan, the National Institute of Genoa for Cancer Research, the OSC and RAMS of Moscow.

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