LIGHT PROGRESS

ENVIRONMENTAL SANITISATION

ULTRAVIOLET SOLUTIONS
FOR CONTAMINATION
CONTROL AND SURFACE
TREATMENT

MAJAC
HEALTHCARE INNOVATION

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UV RAYS and Environmental Sanitisation

UV-C rays: reliable technology

Why is room sanitisation important?

Cleaning, Disinfection, Sanitization and Sterilization

Are UV rays reliable and effective for sanitisation? Do bodies and organizations recommend the use of UV-C rays?

What are the areas of use for UV rays? Which microorganisms can be eliminated with UV rays? What is the UV dose? Are UV rays effective against Coronavirus Sars-Cov-2?

Light Progress Products for Environmental Sanitisation

What are the advantages of Light Progress products for environmental sanitisation? Permanent direct radiation in the absence of people - UV STICK]

Direct irradiation in the absence of people on wheels - UV STICK-ST

Direct radiation in the absence of people on wheels - UV PENTALIGHT

Direct irradiation in the absence of people - University tests

Air purifiers in the presence of people - local treatment - UV FAN

Air purifiers local treatment and surface sanitisation - UV FAN BD and UV FAN BD ST Centralized air treatment - UV-DUCT-FL

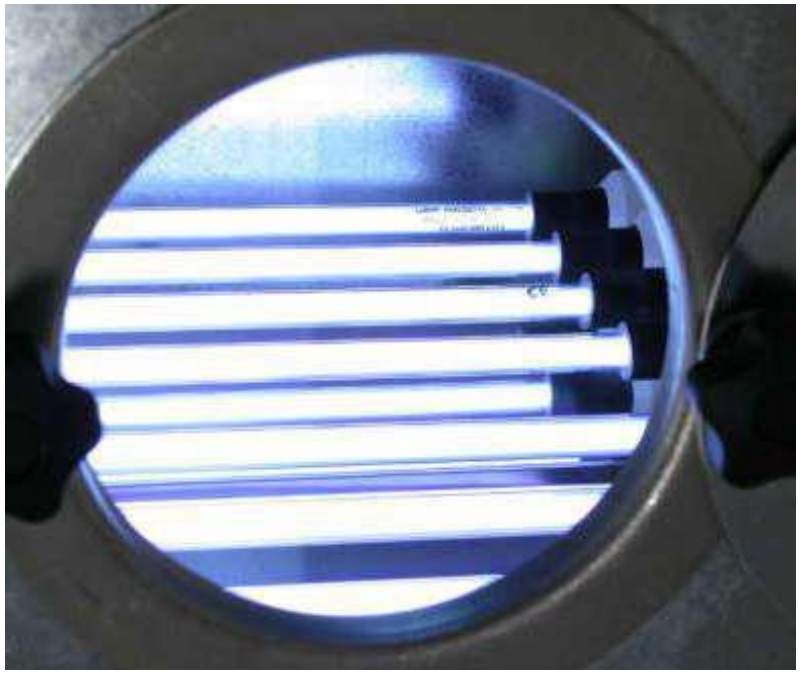
Air treatment - University tests

UV rays and Environmental Sanitisation

UV-C Rays = Reliable Technology

UV-C rays work mainly by destroying DNA or Rna inside bacteria, viruses and fungi. UV-C light has been used for decades to disinfect industrial surfaces and sanitize drinking water and is, in fact, particularly advantageous for sanitary use because it eliminates microorganisms such as the bacterium Clostridium difficile, one of the main sources of nosocomial infections .

UV-C technology has been used for the disinfection of air, water and tools for over a century. It is therefore validated by history. In fact, as early as the 1930s, UV rays were commonly used for the treatment of air and water in hospitals and, starting from the Second World War, they were widely used in processing centers, in water treatment plants and in any facility that had to do with microbial contamination.



1987

Light Progress, since 1987, uses UV-C rays as a solution for microbial decontamination, a technology that over the years has been recognized as synonymous with efficacy and safety.

Remember to avoid exposure to the light emitted by the ultraviolet lamp in order not to risk:

- Serious damage to the eyes and skin
- To yellow plastic or painted surfaces.

Why is room sanitisation important?

Environments play a significant role in disease transmission.

The latest tests carried out on the resistance of Sars-Cov-2 in different surfaces (steel, copper, cardboard, plastic) lead us to think that more attention should be paid to deep environmental sanitisation, in any area, not just the hospital one.

New materials and new technologies are now being introduced in an attempt to reduce the environmental pathway of disease transmission. Ultraviolet sanitisation of surfaces is proving to be one of the most decisive and easy to manage among the solutions on the market.

The use of UV rays is not intended as a substitute for normal manual cleaning activities, but as a physical and ecological alternative that allows for deeper sanitisation. In combination with traditional methods it can make a substantial difference in contamination control.

Cleaning, Disinfection, Sanitisation and Sterilisation

CLEANING

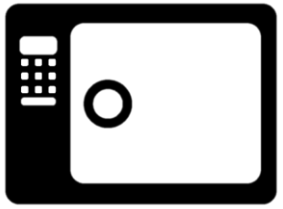
Removal of dirt from a surface compatible with its correct conservation. There is no guarantee of safety with respect to viruses, fungi and bacteria.

DISINFECTION

Application of disinfectants, almost always of a chemical or physical nature (such as UV) which are capable of reducing, through destruction inactivation, the microbiological load present on objects and surfaces to be treated.

SANITIZATION

Intervention, based on the use of detergent chemicals, aimed at eliminating the contaminants that regular cleaning is unable to remove.



STERILIZATION

Total elimination of all forms of life. It occurs through particular processes, such as the use of saturated steam under pressure, fire or treatment at high temperatures.

If correctly used, UV rays can lead to abatement results close to sterilization, even if it is more correct to always speak of disinfection or high degree of disinfection.

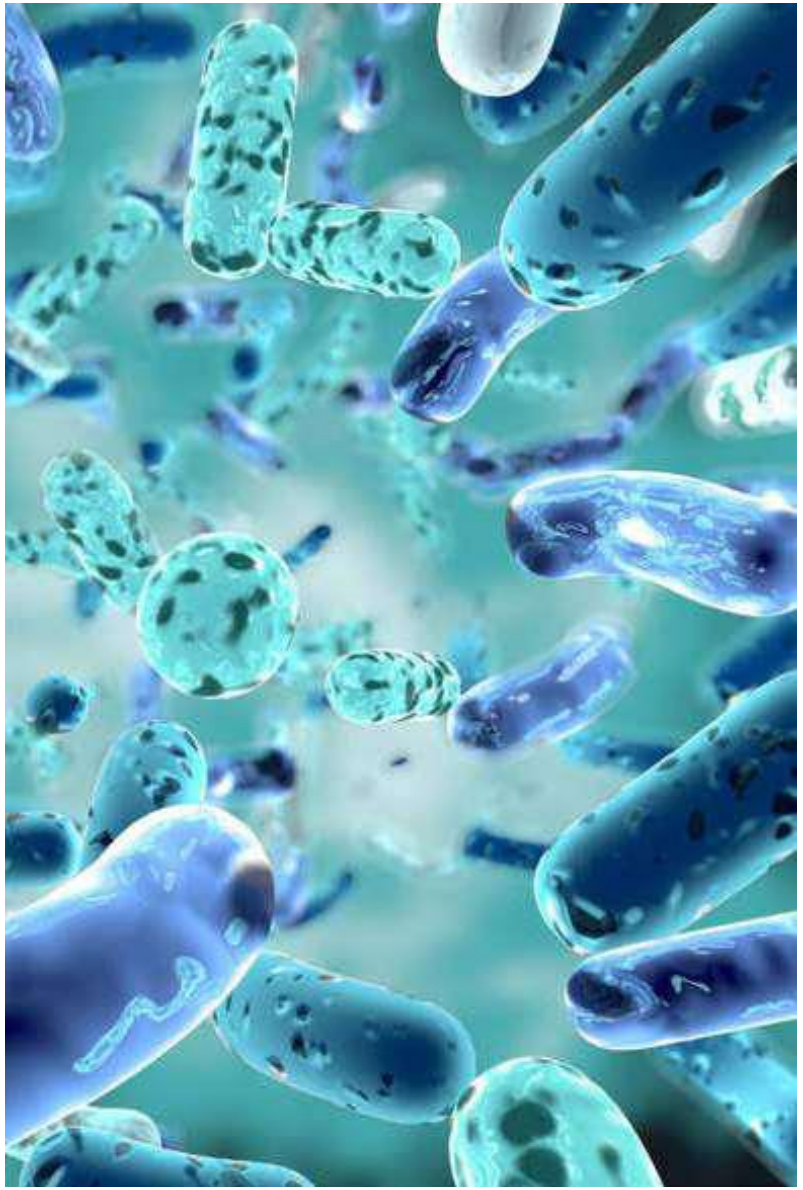
Are UV rays effective and reliable for sanitisation?

Absolutely yes: a correct use of UV rays allows the elimination of up to 99.999% of microorganisms, such as bacteria and viruses, with extreme simplicity and practicality.

Lately their popularity has increased as they disinfect practically all surfaces of a room with minimal effort and without the use of hazardous chemicals or gases. After carrying out the treatment cycle necessary for disinfection, the rooms are immediately reusable in absolute safety and without any precaution as the UV rays do not leave any residue or substances circulating in the air and on the surfaces.

What organizations recommend the use of UV-C rays?

Many world-class bodies and organizations such as WHO, EPA, CDC, ASHRAE have been recommending the use of UV-C rays for the disinfection of water, environments and air conditioning systems for decades. The use of UV-C rays is also indicated for the prevention of Coronavirus Sars-Cov-2 and, following the recent COVID-19 pandemic, it has been successfully introduced in widely affected countries such as China, with examples that include hospitals, urban transport or even domestic environments.



What are the areas of use for UV rays?

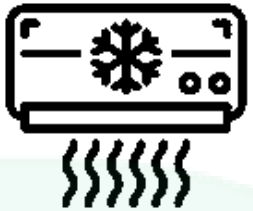
There are no limits to the possible applications of UV-C rays, however specific skills are required to use this technology in an adequate way, obtaining maximum results. UV rays are used every day at:

PHARMECUTICAL MANUFACTURING

To disinfect air and surfaces production environments, disinfect the containers of products (packaging), isolate "protected" areas for the production and the product packaging, like the clean rooms, from areas at risk of contamination. Interventions of this type increase significantly security and conservation of the products we buy commonly.

HEALTHCARE

To avoid the transmission of dangerous bacteria or viruses that may be present in the air or transported by contact by patients or visitors, such as the TB, Legionella, Sars and the new Covid-19. The sanitary field is historically the one with the most application examples, from air treatment to that of surfaces.



HVAC

To avoid the transmission of any pathogen into the air, but also to prevent the formation of mold and bacterial colonies inside the air treatment plants in the pipes. Air conditioning is responsible for "building- related diseases", allergic alveolitis, virus and fungus infections, bronchial asthma, humidifier fever, legionellosis, etc. Many armies have UV-C systems to also prevent possible attacks biological (anthrax).

WATER TREATMENT SYSTEMS

To eliminate all microorganisms that may be present in the water from wells and cisterns. UV rays are traditionally used in most public aqueducts and are often mandatory after an activated carbon filter in water dispersers that are increasingly taking hold in cities to replace the use of bottled water.

ENVIRONMENTS-DOMESTIC

To avoid the formation of mold on the walls, to remove mites, to keep the air healthy inside a room, to treat water. UV-C rays also manage to eliminate odors and grease deposits in industrial kitchens and are also used in catering, with the support of ozone emissions.

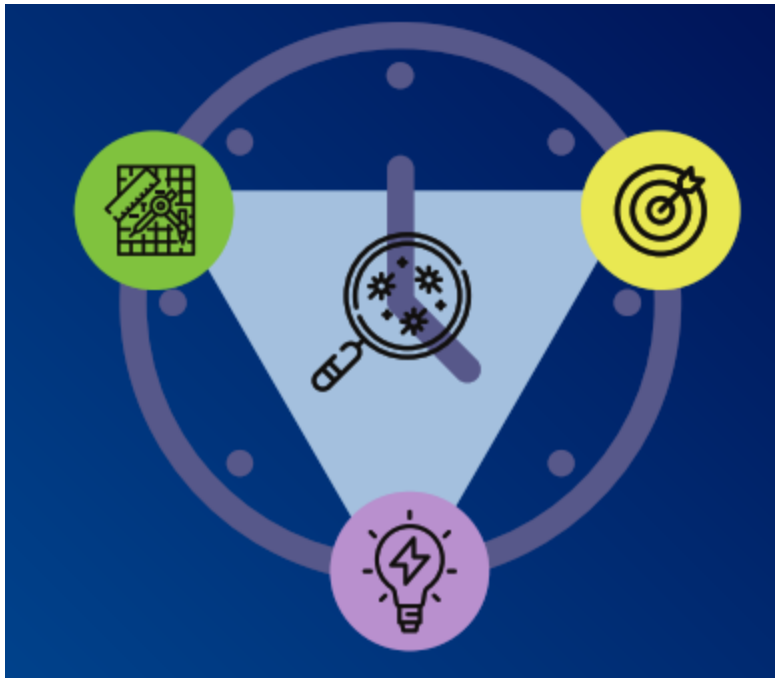
Which microorganisms can be eliminated with UV rays?

Each microorganism has its own particular resistance to UV rays. For a high-level killing of a microbial load, for some microorganisms a few seconds of irradiation are sufficient while for others it takes longer or, for the same time, greater UV power. The charge reduction is expressed as

"Log Reduction", 1 Log = 90% reduction, 2 Log = 99% 3 Log = 99.9% etc.

These just introduced are the essential factors to understand and use UV technology effectively:

- Objective of the degree of reduction (Log Reduction)
- UV dose necessary for the elimination of the target pathogen
- UV power in play
- Exposition time
- Space (Geometry and Distance)



What is the UV dose?

UV rays are effective against any microorganism. Thanks to experimental tests, it has been possible over the decades to establish the resistance to UV radiation of each pathogen. The energy needed to eliminate every single bacterium, spore virus, fungus, mold, etc. it is called dose and is expressed as instantaneous energy necessary to eliminate 99% (or 99.9% or 99.99%) of the single strain.

Are UV rays effective against Coronavirus SARS-CoV-2?

Specific tests on the UV resistance of Coronavirus Sars-Cov-2 will be available soon. However, there are examples of scientific literature about the UV-C treatment of very similar viruses, such as that of Sars-1 or Mers. There is also evidence of the effectiveness of ultraviolet rays in the disinfection of air and surfaces from microorganisms much more complex and difficult to eliminate than this virus, such as C. Difficile, MRSA, or even more deadly threats, such as Ebola and Legionella. It is estimated that the Sars-Cov-2 virus can survive on surfaces for up to nine days, based on its similarity to Sars and Mers. Standard disinfectants are effective against Sars-Cov-2, but to provide additional protection and defend against errors in the manual disinfection process, ultraviolet light can be used to disinfect surfaces and equipment following manual disinfection. UV technology is therefore a valid tool in the fight against H1N1, Sars, Mers and now also Covid-19.

UV DOSE REQUIRED EXPRESSED IN mW / CM2 SEC 99% ABATEMENT

Bacteria	
Mycobacterium tuberculosisn (TB)	4300
Escherichia coli ATCC 11229	4800
Legionella pneumophila ATCC 33152	3200
Pseudomonas aeruginosa ATCC 9027	6500
Salmonella ATCC 6539	4500
Staphylococcus aureus	3200
Streptococcus hemolyticus	4400
Vibrio cholerae	4100
MRSA	6550
Clostridium Difficile	10000
Viruses (generics, DNA and RNA)	
Flu virus A	4558
Hepatitis A HM175	8000
Corona Virus (SARS-CoV1 – MERS-Cov)	1200-1500
Rotavirus	15000
Molds	
Aspergillus Amstelodami	66700
Aspergillus Brasiliensis (Niger)	226000
Yeasts	
Comuni lieviti dolciari	12000
Lievito di birra	20000

Light Progress Products for Environmental Sanitisation

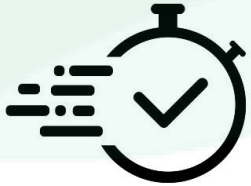
What are the advantages of Light Progress products for environmental sanitisation?

DEEP SANITISATION IN THE ABSENCE OF PEOPLE

Our UV systems they can be switched on continuously in the absence of people (e.g. during the night or during work breaks). The sanitisation of air, machinery and all which is contained within the environment allows a start for the working day in ideal hygienic conditions. The microbial load level of a room is therefore kept constantly low.

SANITISATION IN THE PRESENCE OF PEOPLE

Purification or the integration of UV technology within the conditioning channels in centralised systems allows you to treat the air of an environment, 24 hours a day, without contradictions for the staff present. A real "washing" of the air is thus obtained, lowering the microbial residue after a few minutes, until it is reduced to negligible percentages, in a simple, immediate and safe way and without the slightest contradiction.



IMMEDIATE EFFECT

For effective treatment (99.9% killing of bacteria) takes just a few minutes. All of our products are sized in such a way as to guarantee safe results in certain and rapid times. After the treatment, the objects are immediately reusable, the rooms do not need to be ventilated, the surfaces have no residue.

NO DANGER OF DISPERSION OF GLASSES

With the special UVLON protection, the original and unique optional solution of Light Progress. No danger of dispersion of glass fragments from a possible breakage of the UV-C lamps.

SAFE, CONVIENENT, AND ECONOMICAL

The treatment is immediate and ready for use. Maintenance is minimal with low costs of both energy and service consumption. UV rays do not pass through the materials and are very safe when used correctly. For example, the UV-C wavelength (invisible) cannot pass through any glass, even if the traditional "blue light" of the lit lamp remains visible.

Direct irradiation in the absence of people

Permanent

UV STICK

It can be easily applied as a common ceiling light, super flexible, versatile and simple to apply.

The UV-STICK series includes a wide range of models of direct irradiation strips, different according to the UV-C powers of the lamp (s) and the material of the case.

The -NX model is in fact in AISI 304 stainless steel; -AL model is made of high-quality extruded aluminum, light and solid.

Placed behind the lamp a layer of reflective aluminum mirror bright mirrors the UV rays that are directed towards the surfaces to be treated by optimizing the angle of radiation by increasing the disinfection performance.

Tin to dust and water (IP 55).

Especially in the case of installation of multiple appliances, UV-STICK can be managed by controlling the operation of switching on, off, security control of entry into the treated room, fault alarm and hour counter.

It is ready for use and requires no special maintenance, except for the periodic replacement of the lamps.

It is built entirely in Italy, with high quality and extremely resistant materials.

uv-StickK	e40H-nX	E75H-NX	e40H-al	e60H-al	E75H-AL
*Lamp Lifetime (hours)**	≤ 18.000	≤ 18.000	≤ 18.000	≤ 18.000	≤ 18.000
Total Consumption (W)	40	75	40	60	90
External Dimensions lxsxh (mm)	530x65x96	986x65x96	542x80x95	705x80x95	999x80x95
Weight (Kg)	1,5	2	1,4	1,7	2,2
Treated Volume (m3)	20 ÷ 40	40 ÷ 65	20 ÷ 40	30 ÷ 50	40 ÷ 65
Treated Surface (m2)	7 ÷ 13	14 ÷ 25	7 ÷ 13	10 ÷ 17	14 ÷ 25
Protetcion Rating	IP 55				
Replacement Lamp	cHS-40WH	CHS-90WH	cHS-40WH	cHS-40WH	CHS-90WH

* Continuous Operation

Direct irradiation in the absence of people

On Wheels

UV STICK-ST

The best seller among Light Progress products, UV-STICK-ST is the most compact and cheapest mobile sanitisation system on the market. Very useful for the treatment of small rooms, the main features of UV_STICK_ST are:

- 2 x 18,000-hour lamps positioned on a stand, with 4 swivel wheels to facilitate movement
- All the equipment is in stainless steel
- Control unit with switch equipped with protection fuse, chrono timer for setting the delay and duration of the ignition, start button and hour counter for replacing the lamps when exhausted.
- UV lamps are protected by a grid.
- The body includes reflective walls in mirror polished aluminium

UV-STICK-E2/75H-ST-NX-NT	
Lamp Lifetime (hours)*	≤ 18.000
Total Consumption (W)	2X75
External Dimensions lxsxh (mm)	404x336x1420
Weight (Kg)	7
Treated Volume (m^3)	50 ÷ 100
Treated Surface (m^2)	15 ÷ 30
Protetcion Rating	IP 20
Replacement Lamp	n° 2 CHS-90WH

* Continuous Operation

Direct irradiation in the absence of people

Mobile

UV PENTALIGHT

Designed to provide high quality UV contamination control in any type of environment, the main features of PENTALIGHT are:

- 5 lamps, 360degree irradiation.
- Available in 3 sizes
- Lamp model (60-90 or 120W) (23 inches, 35 inches or 46 inches -T5 lamps) 18,000 hours of lamp life
- Motion sensor on each side to automatically turn off the lamps if staff enter the room.
- Remote control to turn the system on and off and check the treatment status.
- High quality wheels- Visual indicators (orange/ red/green) to indicate accidental start/stop/end of treatment
- Can be connected with 1 or 2 UV-PENTALIGHT SHADOW UNITS with a simple cable.
- The positioning of multiple units in different positions allows users to have a single disinfection cycle by treating an entire area
- The 99.99% treatment must be carried out within 5 minutes. (University tests according to ongoing FDA standards)

UV PENTALIGHT	E5/60H	E5/90H	E5/120H
Lamp Lifetime (hour)*	≤ 18.000	≤ 18.000	≤ 18.000
Total Consumption (W)	350	450	600
Lamp Sizes	600 mm (25.9") G5 High Output	894 mm (25.9") G5 High Output	1175 mm (25.9") G5 High Output
Protection Rating	IP 55		
Replacement Lamp	n°5 CHS-60WH	n°5 CHS-90WH	n°5 CHS-120WH

* Continuous Operation

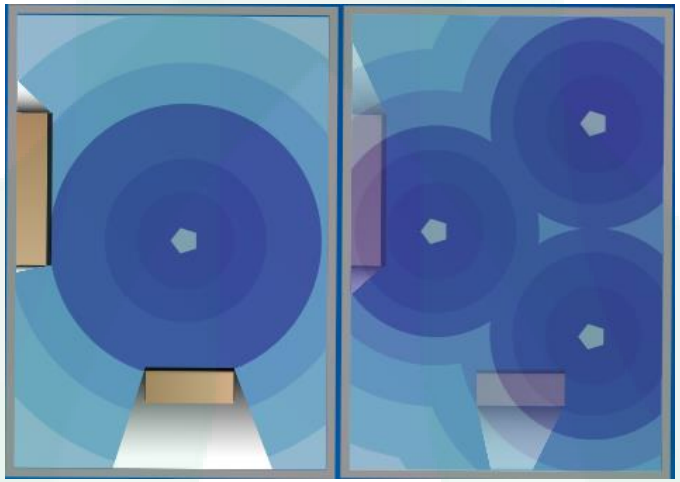
Direct irradiation in the absence of people

Mobile

UV PENTALIGHT

For optimal use, it is recommended to position the UV system in different positions and thus carry out the treatment by trying to cover the whole area, avoiding as much as possible the shaded areas. To optimize the treatment in a single cycle, completely covering larger areas and/or rooms with many shaded areas, the UV-PENTALIGHT model is available in combination with its SHADOW-UNIT which can be connected with a simple cable.

Each UV-PENTALIGHT MASTER version can be connected to a maximum of two SHADOWS in series, however, the power supply is unique, therefore a socket is enough to have distributed up to 3 systems in one environment.

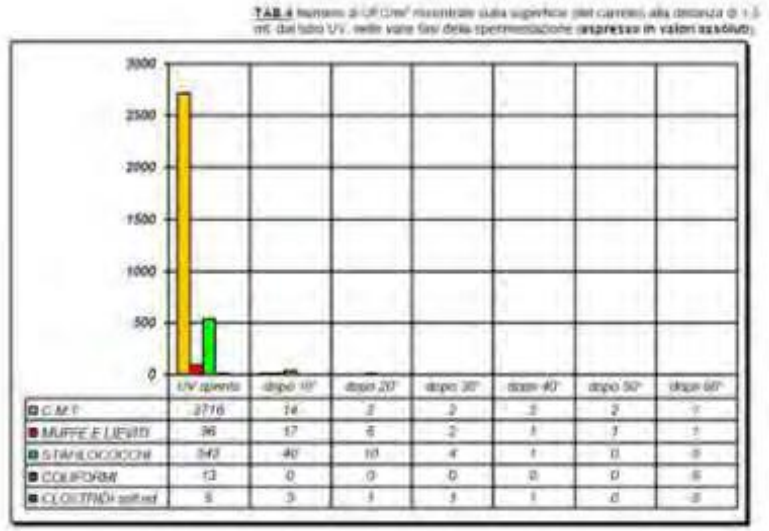


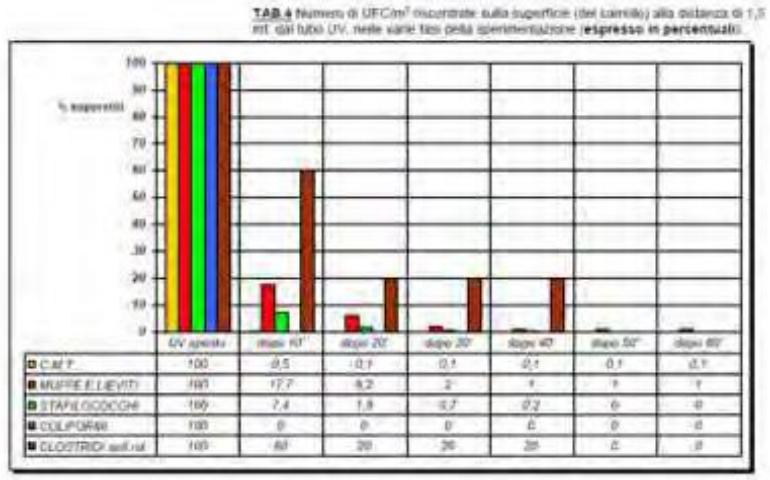
Direct irradiation in the absence of people

The solution supplied adapts precisely to customers' needs, based on our know-how and our thirty years of specific experience in the applications of UV technology for environmental sanitisation, as well as various tests carried out with university research centers.

Light Progress systems are specific for different uses, inspired by real applications and improved over the decades thanks to a very close relationship with installers and end-users.

Continuous tests are underway at the University of Siena, our excellent research partner.





UNIVERSITÀ DI SIENA 1240

Air purifiers in the presence of people

LOCAL TREATMENT

UV FAN

UV-FAN is an extremely versatile UV-C air purifier and consists of a load-bearing structure in extruded aluminum and a front cover with micro-holes that allow the entry and exit of the air at the two ends. Conveyed by a silent integrated fan, the air present in the room enters the germicidal chamber of the purifier to be decontaminated by microbes, viruses but also chemical contaminants.

The germicidal chamber houses the UV-C lamps and is built in a special ultra-pure mirror aluminum which amplifies the disinfectant power of the lamps; by passing through it, the air is purified by all microorganisms to be returned to the environment free of contaminants.

Inside the chamber is housed the TIOX®, nano-structured titanium dioxide filter, which in combination with the very high UVC power emitted by the lamps, is an excellent photo- catalyst that degrades organic and inorganic pollutants (SOV, VOC volatile organic compounds and NOX, nitrogen oxides) present in the environments.

In addition, the nano particles of TIOX® have a strong oxidizing power and amplify the germicidal effect of UV-C rays on microorganisms.

UV FAN

It can be used, always, even in the presence of people, thanks to the optical labyrinths that hold the UV-Cal rays inside, the silent fan and its low consumption. The possibility of constantly keeping the UV-FAN in operation, even 24h / 24, allows a real "washing" of the air, progressively lowering the microbial residue in the air af ter a few minutes, until it is reduced to negligible percentages.

The UV-FAN series includes a wide range of wall or wheel purifiers (-ST model), different according to the UV-C powers of the lamps and the dimensions.

uv fan	uv-fan-M2/40H	uv-fan-M2/95HP	uv-fan-M2/95HP-ST
Dimension LxSxH (cm)	96x26x13	104x32x13	123x32x13
Air Flow (m3/h)	70	150	150
UV lamps Nr. Power (W)	2x40 W	2x95 W	2x95 W
Consumption (W)	105 W	220 W	220 W
T.M.L. reduction >99%	>99,9%	>99,9%	
Irradiation area (m2) (h=m3)	20	40	40
Irradiation Volume (m3)	50	100	100
protection rating	IP 20		

* Continuous Operation

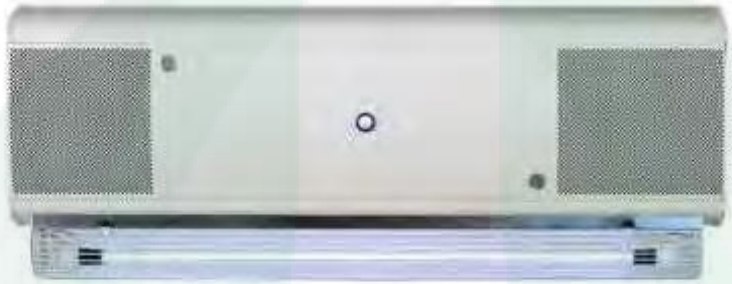
Air purifiers

LOCAL TREATMENT AND SURFACE SANITISATION

UV FAN BD ST

The exclusive BD version (or on BD ST wheels) in addition to the purifier function in the presence of people described so far (operating or daytime phase), provides the possibility of turning on an external integrated UVC lamp to thoroughly disinfect the air and the surrounding surfaces by radiating them directly (in the non-operational or night phase, immediately preceding the use of the premises).

The two ignitions can be managed separately, also by means of a double remote control. The external lamp can be requested with UVLON-PIPE protection to retain glass fragments in case of breakage.



Air purifiers

LOCAL TREATMENT AND SURFACE SANITISATION

UV FAN BD ST

uv fan	UV-FAN-M2/95HP-BD*	UV-FAN-M2/95HP-BD-ST*
Dimension LxSxH (cm)	104x40x13	123x40x13
air flow (m3/h)	150	150
UV lamps Nr. Power (W)	2x95+55 W	2x95+55 W
Consumption (W)	220+55 W	220+55 W
T.M.L. reduction	>99,9%	>99,9%
Irradiation area (m2) (h=m3)	40	40
Irradiation Volume (m3)	100	100
protection rating	IP 20	

* Continuous Operation

Air Treatment

UV-DUCT-FL

It is a disinfection system for HVAC that adapts to small spaces, even for retrofit applications installed inside the air conditioning ducts, or in the final sections of the Air Treatment Units (U.T.A.) directly from the outside. It creates a UV-C barrier that inhibits the proliferation of viruses, bacteria, molds, spores, very harmful to health, which commonly nest within the Air Conditioning.

It manages to treat the air flow that passes through its lamps, eliminating the bacterial load and the dispersion and distribution of dangerous and annoying pathogens in buildings. It inhibits the creation of biofilm on internal surfaces, the result of the presence of microorganisms and conditions favorable to their proliferation present in AC systems, such as temperature changes, high levels of humidity and darkness.

The increase in indoor air quality allows a consequent and general improvement in comfort but, more specifically, the use of UV-DUCT-FL eliminates important problems (such as Legionellosis, Tuberculosis, Influenza, etc.) but also as " Sick Building Syndrome "," Monday Fever ", promotes the control of high hygiene standards in the Food Industries and, in the health sector, that of dangerous Infections Related to Assistance (ICA).

In addition to the numerous health benefits, the use of UV-DUCT-FL allows important benefits in terms of running costs of the A.C. system, which is sanitized and remains clean without the need for continuous and expensive maintenance.

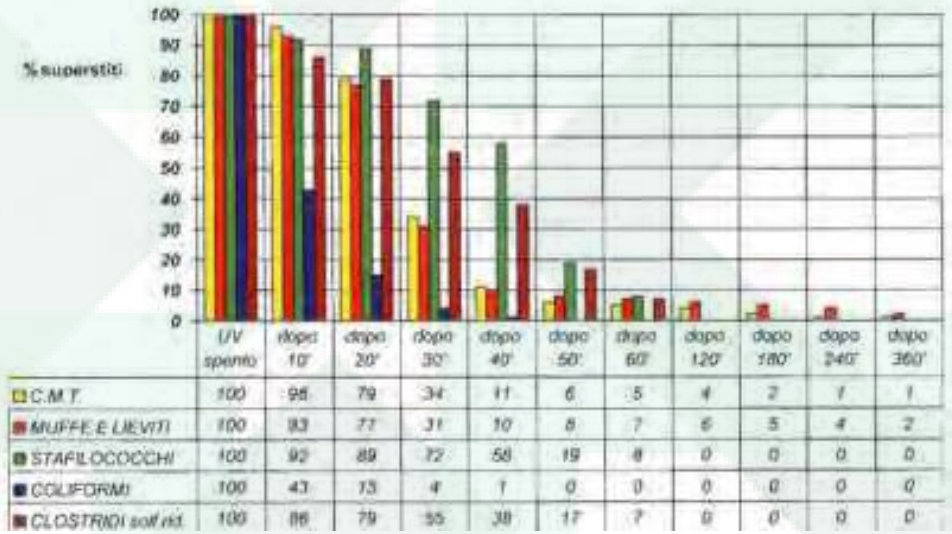
The UV-DUCT-FL series includes a series of flange modules from which two "U" lamps of different lengths (from 20 to 50 cm) and powers (from 70 to 90 W) emerge, protected by a stainless-steel grid. The main features of UV-DUCT-FL are the super compact measurements and onboard controls, which allow an effective application even in existing air conditioning systems (retrofits).

It is installed by making two holes at the point of the A.C. channel, using the practical template provided. After inserting the lamps in these holes, it is only necessary to screw the flange directly to the duct, press the switch and you're done. Specific ballasts are inserted directly inside the case to power the UV-C Light Progress lamps, optimizing their performance and durability.

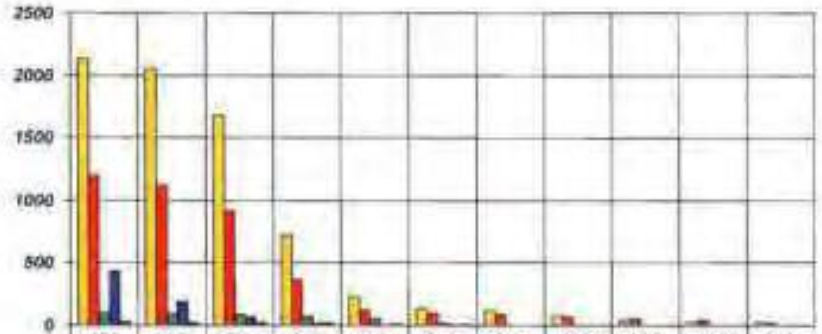
uv-duct-fl	2/35HP	2/60HP	2/95HP
Lamp Lifetime up To (hours)*	≤ 18.000	≤ 18.000	≤ 18.000
Consumption (W)	70	120	190
Dimensions lxsxh (mm)	410x130x278	410x130x477	410x130x603
"A" Lenght (mm)	183	382	508
Weight (Kg)	2	2	2,5
Air Flow (m3/h)	1.000+2.400	1.300+3.400	2.200+5.600
Protection Rating	IP 20		

* Continuous Operation

Air Treatment



	UV spento	dopo 10'	dopo 20'	dopo 30'	dopo 40'	dopo 50'	dopo 60'	dopo 120'	dopo 180'	dopo 240'	dopo 360'
C.M.T.	100	98	79	34	11	6	5	4	2	1	1
MUFFE E LIEVITI	100	93	77	31	10	8	7	6	5	4	2
STAFILOCOCCHI	100	92	89	72	58	19	8	0	0	0	0
COLIFORMI	100	43	13	4	1	0	0	0	0	0	0
CLOSTRIDI soll.rid.	100	86	79	55	38	17	7	0	0	0	0



	UV spento	dopo 10'	dopo 20'	dopo 30'	dopo 40'	dopo 50'	dopo 60'	dopo 120'	dopo 180'	dopo 240'	dopo 360'
C.M.T.	2130	2050	1680	720	233	133	122	78	44	30	24
MUFFE E LIEVITI	1203	1120	922	367	123	98	88	69	54	45	19
STAFILOCOCCHI	98	91	88	71	57	19	8	0	0	0	0
COLIFORMI	433	190	66	18	3	0	0	0	0	0	0
CLOSTRIDI soll.rid.	29	25	23	15	11	5	2	0	0	0	0

As you can see from the graphs, which are found in the "Study on U V-FAN M1 25 efficacy by Siena Univ. - IT_Rev1 c. stamp and signature", the microbial reduction percentages are 99.99% for bacteria and 99% for viruses at each step of the air inside the germicidal chamber.

The solutions provided adapt precisely to customers' needs, based on our know-how and our thirty years of specific experience in applications UV technology for environmental sanitisation, as well as several tests carried out with university research centers.

Further tests are underway at the Institute of Hygiene of the University of Siena.

Light Progress is also recognized as a leader in the design and manufacture of UV systems. It is one of the leading companies registered with the International Ultraviolet Association (IUVA), a world-renowned and agency to which the best UV producers are entrusted for the definition of high-quality standards and scientific recognition.

Light Progress is certified ISO 9001, ISO 13485 and is registered with the FDA and EPA.

SINCE 1987 LIGHT PROGRESS HAS CARRIED OUT THOUSANDS OF SUCCESSFUL PROJECTS ALL OVER THE WORLD

For more information, please visit www.majacmedical.com.au

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