

Grease and Odows Reduction

UltraViolet Germicidal Irradiation (UVGI)



Ultraviolet Germicidal Irradiation is known from the 60s as a good physical method to control growth and distribution of microbial organisms, pathogens, spores, moulds, etc.



What does UVGI mean?





Light in a broad sense can be divided in visible, infra-red and ultraviolet rays. Ultra-violet rays (invisible) can be classified in :

- UV A (with tanning properties),
- UV B (with therapeutic properties)
- UV C (with germicidal properties).



What does UVGI mean?

The absorption of a UV photon by the DNA of microrganisms causes a destruction of a link in the DNA chain, and consequently the inhibition of DNA replication.

The germicidal effects of the UV-C radiation destroy DNA of Bacteria, Viruses, Spores, Fungi, Molds and Mites avoiding their growth and proliferation.

UVGI technology is a physic disinfection method with a great costs/benefits ratio, it's ecological, and, unlike chemicals, it works against every microorganisms without creating any resistance.





UV Disinfection Key Factors

Each microorganism has a specific UV-resistance threshold, called DOSE. The specific dose need to be delivered to get a proper disinfection level, which is expressed in LOG REDUCTION (1 Log=90%, 2 Logs=99%, 3 Logs=99,9%, etc).

Therefore, for some microorganisms a low level of UV POWER is sufficient to be eliminated, while for others it takes more power to get same elimination level...or alternatively a longer exposure TIME.

These factors are essential to understand UV technology:

- Disinfection level that needs to be achieved (Log Reduction);
- Target pathogen (and its dose);
- UV power in play;
 - Exposure time / geometry and distance balance;



UV DOSE needed to eliminate 99% (2 Logs) value in ($\mu W/cm2~SEC)$

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

SANITATION means bringing the microbial load into acceptable and optimal hygiene standards that depend on the intended use of the environments concerned. Sanitation is often used to mean "clean" and must however be preceded by cleaning.

SANITATION

DISINFECT means to reduce the microbial load deeply, that is to eliminate at least 1 log (90%) of the bacteria present. Microbial load reduction is a basic value in disinfection and it is expressed in Log Reduction.

A good disinfection level is around 2Logs (99%) a very good disinfection is 3Logs (99,9%), and 4Logs (99,99%) is considered a pretty high standard.

STERILITY is the closest level anyone can get to achieve complete reduction of microbial load, we can talk about sterilization only if reduction is proved to be not less than 6Logs, meaning 99,9999%.

To declare sterility test has to be proved and certified by third parts by law.

DISINFECTION

STERILIZATION





Light Progress

studies, develops, projects and manufactures

Ultraviolet Germicidal Irradiation devices

















New German Branch Office, Frankfurt.

Light Progress has a brand-new office to follow clients from Germany, Austria, Switzerland, UK, and East and North EU in general. Russian market is also a one of our future target.

Main goal is to increase our presence in these countries and be able to offer better assistance to Key Accounts.

One new Business Development Manager has been employed to strength our Brand Identity and offer a better service for old and new clients.





Great reseller and distributors network



Benefits



We eliminate every harmful microorganism, up to 99,999%





We improve your product Quality

We ensure you safety





We support sustainability

We make you save money







Our team is there to support you

















We offer the **widest product range** of UVGI Devices on the market, providing different solutions, great quality, 100% Made in Italy.

Our Team sizes and projects every application designing a **custom solution** for each specific case, we invest in R&D e work together with Universities and big companies, leaders in their field.

Our products **fit in different application fields**, such as Healthcare, Food Industries, Water Treatment, Odour reduction, HVAC, Public Trasports, etc. with thousand clients in Italy and abroad.

LIGHT PROGRESS operates in different fields and turns Ultraviolet Technology into real Solutions, providing a Specific Device for

every application needed.

OBO Water Health Food Smell reduction

Certificates





IGHT PROGRESS	
CE	
D	ECLARATION OF COMPLIANCE
Ve, LIGHT PROGRESS S	S.r.I., hereby declare under our own responsibility that the following units of own production:
⇒are in accordance w ⇒are in accordance w ⇒are in accordance w	ith EEC directive 2014/30/EU (Electromagnetic Compatibility) ith EEC Machinery Directive dispositions 2006/42/EU ith EEC Low Voltage Directive 2014/35/EU ith EEC (Polse) directive 2009/EEL and 1011/16/EEL
	TECHNICAL STANDARDS APPLIED
NI EN ISO 12100:2010	Safety of Machinery - Basic Concepts, General Principles for Design - Risk
NI EN ISO 13857:2008	assessment and risk reduction Safety of Machinery - Safety Distances to prevent danger zones being reached
SO 14120:2015	by the upper and lower limbs (2008) Safety of Machinery - Guards - General Requirements for the Design and
NI EN ISO 13849-1:2016	construction or inxed and movable guards Safety of Machinery - Parts of the Control System related to the Safety – Part 1: Centeral Design Principles
NI EN ISO 14119:2013	Safety of Machinery - Interlocking devices associated with guards - Principles for design and selection
EI EN 60204-1/EC	Safety of Machinery - Electrical Equipment of Machines. Part 1: General Rules (2010)
N 61439-1:2011	Low-voltage Switchgear and Control Gear Assemblies. Part 1: General rules
	FURTHER TECHNICAL STANDARDS APPLIED:
EC EN 60335-1 "Safety o lectronic Ballasts for the sermicidal UV-C Lamps in lectrical Protective Measu	f household electrical appliances and similar" control of the lamps in accordance with the standard EN 60928. n accordance with EN 61199. ures in accordance with IEC 70-1, EN 60229.
nghiari, 05 January 2017	
	GRESS
esponsible for Standards	Dr. Aldo Santi
IGHT PROGRESS S.r.I.	Via G. Marconi, 81 - 53031 ANGHIARI (AR) - ITALY - http://www.lightprogress.com



				kiwa					
	Reg. Number	6950 - A	Valid From	2019-07-28					
	First issue date	2007-12-21	Last change date	2019-07-28					
	Valid Until	2022-07-29	IAF Sector	19					
FICATE	Quality Management System Certificate ISO 9001:2015 We certify that the Quality Management System of the Organization: LIGHT PROGRESS S.r.I. Is in compliance with the standard UNI EN ISO 9001:2015 for the following products/services: Design and production of UV-C rays disinfection systems.								
CERTI	Chief Operating Officer Giampiers Belcredi WWW The maintaining of the certification is subject to annuel surveillance and dependent on the observance of Kwa Cermet fails contractual regurements. This certificate is composed of 1 page.								
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Certificate Number	20130702-E362672
Report Reference	E362672-20130628
Issue Date	2013-JULY-02
Issued to:	LIGHT PROGRESS SRL
	VIA G. MARCONI 81
	52031 ANGHIARI AR ITALY
This is to certify that	ACCESSORIES, AIR-DUCT MOUNTED
representative samples of	Duct-Mounted UV Lamp Assembly, Models UV-RACK, followed by 3/, 4/ or 6/, followed by 40H, 60H or 90H.
	Have been investigated by UL in accordance with the
	Standard(s) indicated on this Certificate.
Standard(s) for Safety:	Bi-National Standard for Heating and Cooling Equipment,
	ANSI/UL 1995-2011 and CAN-CSA C22.2 No. 236-11
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Only those products bearing the UL covered by UL's Classification and F requirements.	Classification Mark for the U.S. and Canada should be considered as be ollow-Up Service and meeting the appropriate U.S. and Canadian
The UL Classification Mark includes shown); a control number (may be a of UL's evaluation of the product; an the appropriate UL Directory. The U	: the UL in a circle symbol:
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Look for the UL Classification Mark	on the product.
W. u. R army	UUUUUUUUUUUU
William R. Carrwy, Director, North American Certification Programs	

*Available for selected items



University Tests - Air Treatment







1240

University Tests - Microbial Load Reduction

Aspergillus niger

Aspergillus niger su Sabouraud dextrose Agar, a sinistra la piastra non irradiata, a destra la piastra irradiata con UVC

Staphylococcus aureus su Mannitol salt agar, a sinistra la plastra non irradiata, a destra la plastra irradiata con UVC

Prot Emanuela

Staphylococcus aureus









Best Practice

Design Basics



for Air and Surface Disinfection

Ultraviolet germicidal irradiation lamps can help clean coils and improve indoor air quality

promise that the elimination of aircome disease seemed possible. In 1936, Hart used UVGI to sterilize air in a sargical operating room." In 1937, the first application of UVGI for a school venulation system dramatically reduces

UVGI for Hospital Applications Engine The P

Dr. Wladyslaw Kowaiski

Vice President, Immune Building Systems, Inc., New York, NY, drkowakk/@/bsie.com IUVA Air Ewatmenit Symposium, Los Angeles, 2007

INTRODUCTION

ing the Health Care facilities are subject to microbiological airborne hazards that can cause infections in both patients and health care workers. Hospital-ocquired, or nosocomial, tions has be infections have been a penintent problem in hospitals and tice.] they can have complex multifaceted etiologies. It is possible that as much as a third or more of all nosocomial distri infections may be the result of airborne transmission at some point and, if so, air disinfection technologies may be tion -**Frint** able to reduce the nesocornial infection rate. dictal If the direct contact route predominates, as many experts

UVC believe, then surface distrilection technologies could also have a major impact. Combining air and surface *Wills disinfection may be an optimum approach to reduce infection rates and may very well be economical to implement. Existing health care guidalines for ventilation Engra system design, pressurization, filtration, and disinfection 100 procedures have historically held the problem at boy, but emerging nosocomial hazards and increasingly complicated etiologies are creating a demand for new

By W WILL

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control technologie This evolving and growing problem has spawned interest in both existing and developmental technologies, especially among engineers and health care professionals. This presentation summarizes applicable codes and standards. summers the epide logy of airborne no infections and their aerobiological pathways, and reviews air and surface disinfection technologies such as ultraviolat germicidal irradiation (UNG), which may offer more effective solution. A summary of results from implementation of UVGI systems in hospitals is provided which demonstrates average nosocornial infection rate reductions of over 45%.

Guidelines, Codes, and Standards

Various duidelines, codes, and standards exist that offer details for designing health care facility vertilation system (AIA 2001, ASHRAE 2003a & 2003b, CDC 1996 & 2003) Some quidelines specifically address problems like TB, nonocomial intections, and surgical site infections (CDC 2005, Wenzei 1981, Mangram et al 1999, Tablan et al 1994). While these guidelines provide adequate design information relating to airflaw, air exchange rates, and filtration, they do not contain any specific guidelines for UVG applications and are not reviewed here. In fact, the current quidelines that provide any detailed

information relating to UVCI air and surface disinfection are the draft IUVA guidelines (IUVA 2005). The IUVA Guidelines include a description of the operating ameters of UVGI systems intended for effective air timent, and these are equally applicable to health care applications as well as to commercial buildings and other facilities. The operating characteristics for successful UVGI system implementation do not differ (Le. are not more stringert) for hespitals since performance criteria are already near a maximum for any UVGI system that meets the suggested guidelines. Included in the operating rameters are a recommended minimum of 0.25 seconds of UV exposure, an air velocity within the range of 500 fpm +-100 fpm, and a recommended rating of URV 10 or higher, which corresponds to a minimum UV dose of 5 J/m2. Coupled with the requisite filters for heapital applications (per ASHRAE) such combined UVGUEItration air cleaning systems will provide high removal rates for all nosocomial bacteria, fungi, and viruses.

Airborne levels in hospitals are not routinely monitored or regulated. For hospital air, WHO recommends relatively selaxed limits of 100 cluim' for bacteria and 50 cluim3 for lung, but many facilities would fail to meet these (WHO 1988). Environmental fungal spores should be completely terroved per fittation guidelines, and so the presence of any lungal sports in an OR should warrant investigation. According to the oritoria of Federal Standard 209E (FD 209E) on cleansooms, conventionally ventilated operating source rank less than cleas 3.5 (Darmar et al 2005). A limit of 10 cfu/m3, based on the ISO Class 7 cleanroom limit (EU Grade B) used in the pharmaceutical industry and at a target for ultra clean ventilation (UCV) systems, would probably be a more appropriate criterion for hospital OBs and XU.

Airborne Nosocomial Epidemiology

Airburne noncomial infections are those that transmit directly or indirectly by the alrhome route, and they may cause respiratory (primarity pneumonia) and surgical site infections (55b). The cost of nosocornial infections in the U.S. is estimated to be about \$4-5 billion annually and various sources estimate that they cause between 2 and 4 million moscomial infections with some 20-80 thousand latalities annually (Knarakii 2006). It is not known what traction of these infections are due specifically to airbome microbeo, but since many of these microbes are potentially airbome it could be assumed that a large fraction, perhaps 25% or more, involve airborne transmission at some point in the noncorrial etiology

The following article was published in ASHRAE Journal, August 2008. @Copyright 2008 American Society of Healing, Refrigerating and Air-Conditioning Engineers, Inc. It is presented for educational purposes only. This article may not be copied and/or distributed or paper form without permission of ASHRAE.

> The U.S. General Services Administration requires that UVC be included in cooling coll air-handling units for all new facilities and alteration projects to maintain coll cleanliness

Ultraviolet Lamp Systems

By S Willia

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Table 3 Advantages and Disadvantages of UVC Fisture Location Relative to Coll Disad-antapp Location Advantages More space to costall fistores. Lamp and Entire man by Allows formers to better and for damp location. reduce surface where Large cooling, effects may condensation in highest. Allows finners to readiate reduce UV crateral, or ricquiry winds or more larges and it stars generally most opplams sale. part of coil and drain pan. for a given result Lamp and fisher may be May not allow enough spay to install fixtures. May initially take longer to May be the only location to apply features. clean coil and may not or Longs and Estures may disinfict chain pan-Bu randed that on downstream use





Fig 7 UV Lamps Upstream or Downstream of Coll and Drain Pag

site to ensure that electrical interlocks are included to deepergize the UV system when it is accessed. UV systems should operate continuotedy to maximize UV's benefits and to improve lamp life, and to et model and bacteria growth that occurs when an HVAC systern is not operating.

UVG systems can be installed upstream or downstream of the cooling coil (<u>Figure 7</u>). Both locations have advantages and disadvantages, as shown in Jable 3. Figure 8 shows an actual installation at a coil.

Upper-Air UVGI Systems Upper-ait imagation systems are designed to imadiate only air in the upper part of the room. Their narrow, focused beam is placed parallel to the plane of the colling and prevents stray ulitawisely trans-from interinging an occupants below. Upper-air systems rely on air suspection and mixing to move air from the lower to the upper portion of the more, where it can be impliated and airborne mice organistro inactivated (Kethley and Branch 1972). Many flatteres





hydical space to be treated. Ceiling heights above 10 ft allow more for more open fistures. which are more efficient. For occupied spaces with lower collings (less than 10 ft), various lowered upper room UVGI future (wall, rendant, and competiant available to be mounted in combinations at least 7 ft from the floor to the bottom of the fisture. Figure 9 shows some typical elevations and corresponding UV levels, and Figure 10 (Bustrates distribution in a room.



v used in buildings: in-duct, de a high level of ultraviolet past the lamps. Upper room he occupants, shielded from urces to create currents that rooms with low air turnover in pan in the delivery plenum

This irradiation of stationary intensity requirements than oving air stream. to provide radiation at the

microorganisms. The lamps rescent lamp but differing in other difference is that UVC ransmits UVC, rather than

These guidelines deal primarily with issues related to placement of UVC systems in air handing units in the proximity of the cooling coil.

How important is indoor air quality?

Evidence strongly suggests that poor environments in schools, primarily due to the effects of indoor pollutants, adversely influence the health, performance and attendance of students and teachers. This evidence links high concentrations of several air pollutants to reduced school attendance. There is also persuasive evidence that microbiological pollutants are associated with increases in asthma effects and respiratory infections, both of which are related to lower school performance and attendance.² UVC lights offer a potentially effective means of both reducing energy use and delivering fresh air to improve classroom air quality.

UVC lamps are designed to clean both the coil and drain pan surfaces in a few hours or a few days* and to progressively penetrate between the coil rows and fins with time. Indoor air quality may be improved since the coils that are continuously cleaned by UVC are thus no longer an incubation site for microorganisms. Air flowing through the coils is therefore not contaminated, resulting in cleaner air being delivered to the classroom.

What are the maintenance issues with UVC?

An effective traditional coil cleaning program cleans the coils three to four times per year. Use of UVC lamps can eliminate the need for these costly, tedious cleaning treatments that create system downtime and use chemicals, biocides or pressure washing, Mechanical or chemical washing may also damage coils. Maintenance benefits may accrue from use of UVC lights to keep coils continuously clean, avoiding these laborious coil cleaning actions that will otherwise be required to return coils to a clean condition. UVC lamps should be inspected to see if they are dirty and then cleaned on a regular basis, as needed. Some installations have a view port to permit visual observation of the

Scientific Studies





Figure 2.1: Location and spacing for UVGI system in an air handling unit.

2.2 Location of UV Lamp Ballasts

UV lamp ballasts should preferably be located external to the ventilation system although this is not currently a strict requirement due to so many systems that have integral lamp ballasts that must be located wherever the lamp is located. One of the problems with lamp ballasts being located inside air handling units is that they may be exposed to temperature and humidity extremes.

If lamp ballasts are located in an internal lamp housing, the housing should be of drip-proof construction or other approved housing method. If lamp ballasts are located external to the air handling unit or ductwork, the wiring must be run through conduit such that there is no exposed wiring inside the air handling unit. Exposed wiring may be subject to deterioration inside and air handling unit and may also be exposed to UV irradiation, which may cause photodegradation over time and thus pose a fire hazard.

2.3 Operating Conditions

Both the UV lamp and the ballast should be located such that the ambient operating conditions (i.e. temperature and relative humidity) are within the component design or operating limits. Refer to manufacturer's information for design operating conditions. In general, both UVGI and filters are designed to operate at an air velocity of 500 fpm, although some lamps may be suitable for operation at higher velocities. Variations in air velocity (i.e. +/- 100 fpm) may be acceptable depending on the manufacturer's lamp but such variations should be evaluated to include or assess the impact on UV output. See IUVA-G01A-2005, "General Guideline for UVGI Air and Surface Disinfection Systems," for



a lamp in an axial configuration.

6.2 Operation of the Program

The program takes the input data from an input text file, performs the analysis and outputs results in a text file. Intermediate results can be extracted and graphed in spreadsheets.

Input data requires definition of the coordinate system. The lamp coordinates are based on the lower left front corner of the matrix being at (0, 0, 0). The indices for both the large and small matrices are also based on this (0, 0, 0) point.

Using the input the enclosure intensity field is determined by evaluating the direct intensity field of the lamp, the first reflection intensity field, and the total inter-reflected intensity field. These are summed to produce the total intensity field of the enclosure. This process is shown by the flow chart in Figure 6.2.

As mentioned previously, the inter-reflections are only computed for three iterations, after which the total bulk average intensity is determined mathematically for the remaining interreflections. Each of the first three inter-reflection calculations involves computing the exchange of radiative energy from each of the blocks on the other three sides, for all four walls. The summed result produces the wall intensity contours for the next set of inter-reflection calculations. This is the most calculation-intensive portion of the program and takes up the most operating time. In comparison, the direct and first reflection calculations proceed relatively rapidly.

Because two different size matrices are used for the computations, it is necessary to scale up the smaller matrix to match the size of the larger matrix prior to adding them. This is

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Effective UVGI System Design Through Improved Modeling

W.J. Kowalski, P.E. Rhadiast Manufair ARMRAE William P. Bahnfleth, Ph.D., P.E. Member ASHORAF

ABSTRACT

This paper summarizes an improved methodology for predicting the rate of airstream disinfection for UVCI systems that will enable officitive designs and lower energy cents. This approach uses radiative view factors to define the shreedimensional intensity field for lamps and effective surfaces inside enclosures. Lang photomensor data for a variety of lance are shown to agree more closely with the view factor model than with models using the Inverse Square Law. The interactly field due to a flectivity from internal surfaces in determined by assuming diffine pellectivity. An analytical method in question determine the inter-reflection component of intermity due to multiple internal reflections. The superposition of these components yields a three-dimensional intensity field matrix that can be used to calculate disinfection rates for any given microbial rate constant. Results from laboratory bissonys using 5. marcesteau in various duct configurations have corroborated model predictions within ±15% in most cases.

INTRODUCTION

Currently available design information has not guaranteed predictable performance for UVGI air disinfection systems. Some of today's design practices can overdesign systems, leading to prohibitive costs and high energy comuption. Other design practices lead to undersized and meffective systems. Design practices have not changed in decades, and it is worthwhile to review the history of UVOI applications to discover how this situation has come to be.

Although the first LIVET water disinfection system was implemented in 1909 (AWWA 1971), the first UVOE systems designed for sirstness disinfection weren't implemented until the 1930s (Sharp 1940). Based on limited laboratory data and

using newly available UVOI hangs, these systems were sized without the benefit of preexisting creation. Texts, either air sampling or epidemiological, were used to determine their efficacy. Some of these systems were highly successful, such as those used to control mensles in schools, and one used by Riley to eliminate TB bacilli from hospital ward exhaust air (Riley and O'Geady 1961).

Other designs appeared to be meffective, with the result that the initial glowing reviews of this technology became tempered. Guidelines were issued that sanctioned the use of UVOI only in combination with HEPA filters (Lociano 1977). ASHRAE 1991). No studies were ever undertaken to determine the root cause for any UVGL system failures. Apart from improvements in Imp designs, applications technology for sirstream disinfection has remained almost etogrant for decades

The first design midelines for UVGI anstream disinfertion protems were developed in the 1940s (Lockiesh and Hollsday 1942; Luckiesh 1946). Versions appeared in catalogs that continue to be reproduced and used today (Philips 1985). These midelines offer orocedures, charts, and tables to size lamps and reflective surfaces so as to obtain a desired disinfection rate. These sizing methods, though admirably detailed for the period, suffer from a number of deficiencies:

- I. They fail to define the intensity field, instead merely using the lamp enting or else relying on photometric data for lamp mideeinte
- 2. Lumps are specified without regard to lump location or
- The correction factor for rectangular ducts ignores the intensity field variations due to surface reflectivity.

W.J. Kewabiki is a doctoral candidate and Williams P. Bahafleth is an associate professor in the Department of Architectural Engineering. Penasylivania State University, University Park, Pa.

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What happens inside Kitchen Ventilation Systems ?





In restaurants and community kitchens, during food cooking phases, fats pollutants and unpleasant smells are generated.

Besides these inconveniences, those deposits are very dangerous for **fire risks**, and for this reason continuous maintenance operations are necessary.

Furthermore food cooking bad smells may be disputed by authorities and give often rise of legal issues with the neighborhood.

What happens inside Kitchen Ventilation Systems ?



Fats are carbon and hydrogen compounds, with a structure made of complex chains.

If fats are **exposed to an intense UV-C irradiation**, they absorb part of this powerful energy, and molecules, placed in a higher energy state, become more reactive.

For this reason they recombine with oxygen present in the air.

This process causes a particular and immediate chemical reaction, the **"cold combustion"**.

Results of this reaction are organic and odorless short chain gases, such as carbon dioxide (CO2), water, etc.., normally present in air.



What happens inside Kitchen Ventilation Systems ?





UV-SMELL-SQ o UV-STYLO-S are applied either inside kitchen hoods or in kitchen ventilation system, through a «plenum».

Both devices can be equipped with UV-C+O3 (Ozone) lamps or UV-C ozone-free lamps; these are the first devices in the market that can handle ozone or ozone-free lamps, alternatively or even combined together, according to clients' needs.

So the air filtered by **UV-SMELL-SQ or UV-STYLO-S** during normal cooking, reduces the formation and deposits of fat and the consequent risk of fires, limiting also the growth of molds that feed usually on fats.







TIOX[®] honeycomb filter, original Light Progress (optional) is a special filter coated with nanostructured titanium dioxide and silver salts (optional) that, in combination with the very high UVC power emitted by lamps, is an excellent photo-catalyst that degrades pollutants and organic and inorganic compounds (SOV, NOx and VOC volatile organic compounds, nitrogen oxides).

TIOX[®] filter performs further oxidation of polluting particles, and contributes significantly to the deodorizing action of UV-C.

Il TIOX[®] can be added inside UV-SMELL-SQ or in between the application of UV-STYLO-S.









- Body in STAINLESS STEEL AISI 304.
- UV-C selective (253.7 or 253,7 nm + Oz 183 nm.) high efficiency, pure quartz.
- Waterproof and dust proof (IP 55)
- Control Board in ABS; LED synoptic view with hourcounter (IP65)
- Modular system, can be applied combining more units
- facilitated connections plug with pre-wired multipole cable
- All materials are tested for resistance to intense UV-C rays and Ozone.
- Powered by electronic ballasts specific for Light Progress UV-C rays lamps. (220-240 V, 50-60 Hz)
- Suitable for TiOX® filter (optional)
- CE Mark (LVD EMC MD RoHS).







UV-SMELL-SQ		4/40H (TX)	4/90H (TX)	4/120H (TX)	6/40H (TX)	6/90H (TX)	6/120H (TX)
LIFETIME LAMP (hour)	DURATA LAMPADA (ore)	9000	9000	9000	9000	9000	9000
UV-SMELL-SQ (+Oz)		4/40H-Oz(TX)	4/90H-Oz(TX)	4/120H-Oz(TX)	6/40H-Oz(TX)	6/90H-Oz(TX)	6/120H-Oz(TX)
LIFETIME LAMP (hour)	DURATA LAMPADA (ore)	6000	6000	6000	6000	6000	6000
CONSUMPTIO N (W)	CONSUMO TOTALE (W)	40x4 = 160	80x4 = 320	100x4 = 400	40x6 = 240	80x6 = 480	100x6 = 600
UV-C EMISSION (W)	EMISSIONE UV-C (W)	13x4 = 52	26x4 = 104	32x4 = 128	13x6 = 78	26x6 = 156	32x6 = 192
MODULE	DIMENSIONI MODULO	175xAxB	175xAxB	175xAxB	175xAxB	175xAxB	175xAxB
DIMENSIONS (mm)	(mm)						
DIMENSIONS (A)(mm)	DIMENSIONI (A)(mm)	594	1052	1332	594	1052	1332
DIMENSIONS (B)(mm)	DIMENSIONI (B)(mm)	253	253	253	358	358	358
DIMENSIONS (C)(mm)	DIMENSIONI (C)(mm)	96,5	96,5	96,5	149	149	149
SUPPLY BOX	DIMENSIONI	314x394x128	314x394x128	314x394x128	314x394x128	314x394x128	314x394x128
DIMENSIONS (mm)	ALIMENTAZIONE(mm)						
Weigth(Kg)	PESO (Kg.)	5,50	6,00	6,50	6,50	7,00	7,50
MAX AIR FLOW TO BE	Volume di aria esausta	1.000 mc/h	2.400 mc/h	3.200 mc/h	1.600 mc/h	3.600 mc/h	4.800 mc/h
TREATED (mc/h)	trattabile (mc/h)						

- Body in STAINLESS STEEL AISI 304.
- UV-C selective (253.7 or 253,7 nm + Oz 183 nm.) high efficiency, pure quartz.
- Waterproof and dust proof (IP 40)
- Modular system, can be applied combining more units
- Facilitated connections plug with pre-wired multipole cable
- Quartz sleeve to protect the UV lamp (or UV + Oz)
- All materials are tested for resistance to intense UV-C rays and Ozone.
- Powered by electronic ballasts specific for Light Progress UV-C rays lamps. (220-240 V, 50-60 Hz)
- Suitable for TiOX[®] filter (optional)
- UVLON PIPE special sleeve (optional)
- CE Mark (LVD EMC MD RoHS).

- Body in STAINLESS STEEL AISI 304.
- UV-C AMALGAM selective (253.7 or 253,7 nm + Oz 183 nm.) high efficiency, pure quartz.
- Waterproof and dust proof (IP 40)
- Modular system, can be applied combining more units
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- Suitable for TiOX[®] filter (optional)
- CE Mark (LVD EMC MD RoHS).

TABLE - Tabella

UV-SMELL-A		172
LIFETIME LAMP	DURATA LAMPADA	18.000
UP TO (hour)	FINO A (ore)	
UV-SMELL-SQ (+Oz)		172-Oz
LIFETIME LAMP	DURATA LAMPADA	16 000
UP TO (hour)	FINO A (ore)	10.000
CONSUMPTION (W)	CONSUMO TOTALE (W)	1X172=172
UV-C EMISSION (W)	EMISSIONE UV-C (W)	51
MODULE DIMENSIONS	DIMENSIONI MODULO	1020V151V47
(mm)	(mm)	1020/131/47
WEIGHT(Kg)	PESO (Kg.)	3
MAX AIR FLOW TO BE	Volume di aria esausta	$1.200 \text{ m}^{3}/\text{h}$
TREATED (m³/h)	trattabile (m³/h)	1.200 m²/n

After taking samplings from a frying station determine the amount of grease in kitchen air. Thanks to our systems, in every sample we took the amount of grease particles was consistently reduced.

What are main benefits and advantages ?

Important reduction of odors and smells coming from kitchen ventilation system. No germs proliferation (bacteria and mold) or fat deposits.

Less maintenance interventions, deep surface cleaning without the continuous use of high pressure equipment and chemical products, usually very expensive.

Significant life improvement of active carbon filters, which are "cleaned up" by the ozone absorbed and maintain best performances in time.

Ecological Treatment (cold and dry) without any chemical spray or agent, dangerous for the environment.

Fire protection with the prevention of highly flammable fats' deposits in the hoods and inside exhaust-air ducts. Maximum safety for employees.

Quick installation, maintenance and lamps replacement are easy. Our team will help you and guide you in choosing the solution that best suits your needs.

UV-STYLO-S		11	16	40H (OZ)	60H (OZ)	90H (OZ)	120H
LAMP LIFETIME (hours)	DURATA LAMPADA (ore)	9000	9000	9000	9000	9000	9000
				(6000)	(6000)	(6000)	
CONSUMPTION (W)	CONSUMO TOTALE (W)	11	16	35	60	85	100
"A" DIMENSIONS (mm)	DIMENSIONI "A" (mm)	196	272	397	541	851	1.132
Weight (kg)	Peso (kg)	0.20	0.30	0.70	0.75	0.80	1.00
AIR FLOW IN M ³ WITH SPEED	PORTATA D'ARIA IN M ³ CON	00	120	200	450	600	750
MAX 2.5 m/s	VELOCITA' MAX 2.5 m/s	80	120	280	400	000	100

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References

Thank you