



# **SterilAir PRO**

## **BIOLOGICAL**

## **AIR TREATMENT**

How to prevent airborne infections  
effectively and safely  
for patients and personnel

# Safe air in waiting rooms and clinical areas



Reduction or elimination of biological pathogens present in the air

For constant use in the presence of personnel and patients

Easy to use and low maintenance

# Airborne infections. The problem.

Airborne contamination has always been a serious problem in our society; in fact, there are many airborne diseases.

Meningitis, diphtheria, tuberculosis, measles, rubella, mumps, and even simple flu, colds and the new forms of flu that have appeared in recent years. In some environments the problem of airborne transmission is particularly critical, especially those places where there is a high density or turnover of people (public places, meeting places, schools, kindergartens etc.), or healthcare or surgical environments. Some healthcare environments are even more critical, for example dental environments, where the sprays and ultrasounds used spread microparticles which are then transported into the environment.

All these infections are increasingly frequent, so much so that in some cases they are even defined as pandemics, generating high costs and major social problems. Based on the recommendations of the CDC (*Centers of Disease Control and Prevention*), environmental biological treatment systems can immediately be applied to reduce the risk of airborne viruses spreading, which is why such devices can be used in any environment.



## The air in waiting rooms

- Due to their very nature, waiting rooms are places where the prolonged presence of patients and those accompanying them can lead to cross infection.
- Infection can occur either between the patients who are waiting, between the patients and personnel in the practice or by the transmission of pathogens into the air of the premises.



## The aerosol problem

- It has been clinically proven that atomisation produces 400,000 particles per minute which are dispersed in a hypothetical 3-metre sphere around the source.
- This sphere strikes operators in an area of about 70% between the torso and the head.
- 60% of the particles are infected.
- 70% of the microparticles are less than 0.3 microns in size and are therefore assimilated by the body.
- Each individual, during an eight-hour shift, breathes in about 10,000 litres of air.



## The search for a solution

- Environmental biological treatments often require the use of substances or methods which are incompatible with the presence of personnel.
- Many types of equipment have expensive filters which need to be replaced periodically and which themselves represent a risk when handled.
- Many types of equipment are sold as being suitable for use in medical environments but are actually unfit for purpose, either because they are too small or simply because they derive from devices designed for domestic use.
- So what is the solution?

# SterilAir PRO. The solution.

## Combating airborne infections for 20 years.

Tecno-Gaz is the manufacturer of SterilAir PRO, a device that we first studied, designed and produced for dental use 20 years ago with the aim of creating an extremely high-performance device using mercury vapour discharge lamps which guarantee optimal abatement for 9000 hours. As well as being simple and intuitive to use, it is also easy to programme and requires practically zero maintenance. SterilAir PRO has 4 lamps enclosed in a special chamber and this ensures maximum biological results. We also used a self-cleaning filter to block dust and microparticles, avoiding the use of other filters that reduce the air flow rate and require periodic maintenance. Thanks to the technologies adopted, we can guarantee optimum results, eliminating periodic costs and ensuring the highest possible safety levels. Thousands of dental practices and doctors in Italy and around the world use this extraordinary system .

## Using SterilAir PRO means:



### **Reducing the risk of contaminating operators,**

as also required by the Consolidated Safety Act and recently also recommended by the WHO (World Health Organization)



**Considerably reducing** the potential contamination of operators and patients



**Having a bacteriologically safe environment**



On the wall



On the floor with optional stand

### **Maximum flexibility in all environments**

SterilAir PRO can be wall-mounted or, using the optional stand, placed in any environment, with the maximum freedom to move it when needed.



**No ozone dispersion**

**Output grille**

The treated air is expelled from the outlet nozzle thus reducing the microbial load in the environment.

**Irradiation with UV-C rays**

The mercury vapour tubes produce irradiation for maximum germicidal action.

**Dust filter**

for primary purification from coarse pollutants.

# Biological air treatment

Protect your professional reputation by protecting your health and that of your employees and patients. SterilAir PRO is the first system dedicated exclusively to biological air treatment. Boasting an innovative design, SterilAir PRO overcomes the problems of direct and indirect exposure to short wavelength ultraviolet rays (*UVC 254 nm*) and **can be used continuously even in the presence of people, without any risk** to the latter. The most effective means for destroying microorganisms in the air.

## Safe for people.

No dispersion of radiation and ozone in the environment.

Absolutely risk-free for humans since there is no leakage of UV-C radiation from the device.

## Continuous disinfection.

For constant protection.

The air in any environment is treated and purified continuously, during all work phases and in the presence of operators.

## Programmable.

Maximum protection according to your needs.

Programme SterilAir Pro to switch on a couple of hours before your arrival until the end of the day.



## Closed-loop forced ventilation

The device works on the basis of a closed-loop, forced ventilation system. The air sucked in by SterilAir PRO first passes through a dust filter located in the intake, which stops the coarsest pollutants and preserves the integrity of the lamps, giving the air an initial purification. The air then enters the irradiation chamber in direct contact with the 4 mercury vapour tubes which, thanks to the emission of UV-C radiation, carry out maximum germicidal action. The air is expelled from the outlet nozzle thus carrying out microbiological abatement.

# The advantages



**Solid aluminium construction**

**Tecno-Gaz Quality**

**No risk to people**

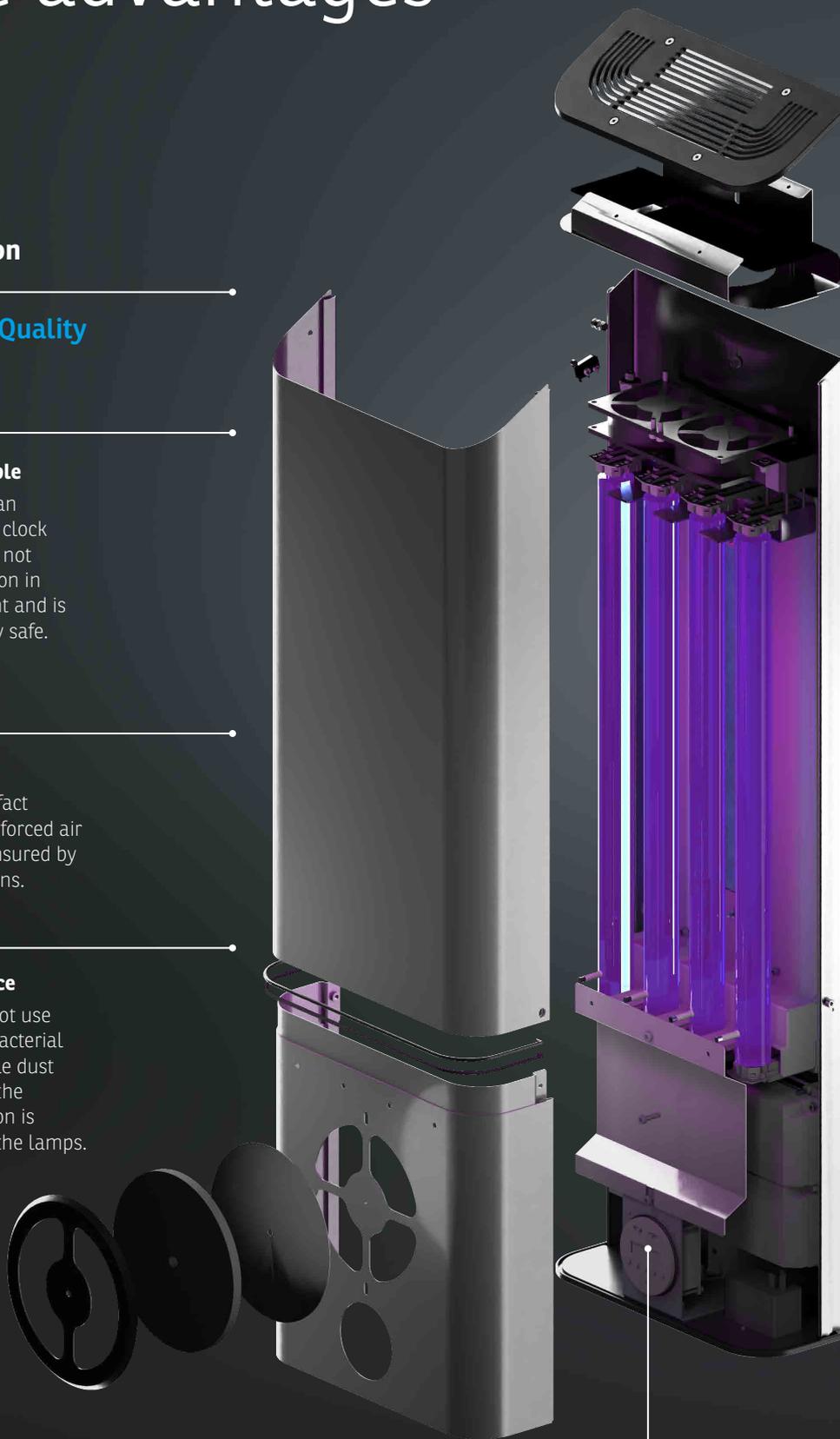
SterilAir PRO can work round the clock because it does not disperse radiation in the environment and is therefore totally safe.

**No noise**

Operation is in fact noise-free. The forced air circulation is ensured by special silent fans.

**No maintenance**

SterilAir does not use expensive antibacterial filters but simple dust filters because the germicidal action is guaranteed by the lamps.



**Programmable**  
Thanks to a simple display.

**Maximum effectiveness**  
Thanks to UV-C rays.

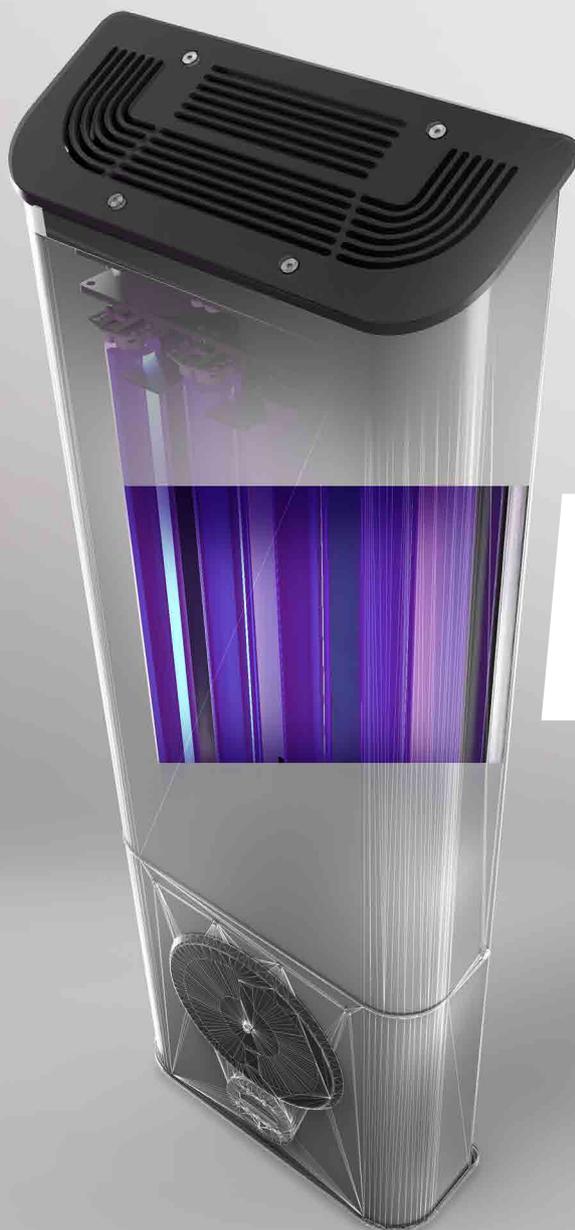
# Controlled ultraviolet radiation

No risk to people. Maximum safety.

The great advantage of our system is the absolute lack of risk to humans as there is no leakage of UV-C radiation from the device and the air path is controlled and forced.

## 9.000 hours

Lamp life

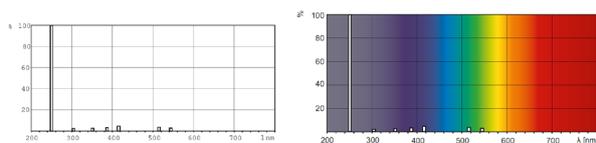


### **SterilAir PRO. The system for environmental decontamination in the presence of operators**

There are various methods for decontaminating air, such as free ultraviolet radiation, chemical methods using iodoform, chlorhexidine, or quaternary ammonium derivatives, nebulised using special equipment. These methods, although considered effective, have a temporary effect and can only be used when there are no operators present and in situations of absolute inactivity.

**The most suitable and absolutely most effective method is definitely the use of ultraviolet radiation at controlled wavelength. This performs an intense microbicidal and virucidal activity on numerous microorganisms.**

Photometric Data



It acts by blocking the reproductive capacity of microorganisms by altering their chromosomes. No microorganisms are immune to germicidal radiation: spores, bacteria, moulds, yeasts are eradicated by this radiation and the DNA of viruses is also destroyed.

## 120 m<sup>3</sup>/h

High treatment capacity

# High efficiency lamps

## SterilAir PRO is equipped with 4 UV-C lamps

Unlike other solutions, SterilAir PRO uses four low-pressure mercury vapour discharge lamps; this allows germicidal action in larger environments, reaching maximum efficacy in a shorter time.



### Germicidal action

These emit short-wave UV radiation with a peak of 253.7 nm (UV-C) for an effective germicidal action



### Proven effectiveness

The glass of the lamp acts as a filter to the ozone line (185 nm)



### Maximum construction quality

The protective inner coating guarantees the efficacy of the UV-C rays over time

The fields of application of mercury vapour lamps are numerous, testifying to their reliability in combating a large number of pathogens.



### Extensive microbiological effectiveness

Neutralization of bacteria, viruses and other primitive organisms.



### Industries with a high risk of contamination

Disinfection of water, air and surfaces in hospitals, pharmaceutical and bacteriological research laboratories and in food processing industry companies such as dairies, breweries and bread factories.



### Proven efficacy also for the treatment of liquids

Disinfection of drinking water, wastewater, swimming pools, air-conditioning systems, cold rooms, packaging materials, etc..



### Versatile application

Use in a multitude of photochemical processes.

# Proven safety

## Average UV rate constants for animal viruses and phages

Virus	Type	Water		Surfaces		Air Lo RH		Air Hi RH	
		D <sub>90</sub> J/m <sup>2</sup>	UVGI k m <sup>2</sup> /J	D <sub>90</sub> J/m <sup>2</sup>	UVGI k m <sup>2</sup> /J	D <sub>90</sub> J/m <sup>2</sup>	UVGI k m <sup>2</sup> /J	D <sub>90</sub> J/m <sup>2</sup>	UVGI k m <sup>2</sup> /J
Adenovirus	dsDNA	903	0.00255			49	0.04700	34	0.0680
Adenovirus type 1	dsDNA	322	0.00714						
Adenovirus type 15	dsDNA	396	0.00581						
Adenovirus type 2	dsDNA	324	0.00711	400	0.00576				
Adenovirus type 4	dsDNA	921	0.00250						
Adenovirus type 40	dsDNA	546	0.00422	300	0.00768				
Adenovirus type 41	dsDNA	515	0.00447	236	0.00976				
Adenovirus type 5	dsDNA	522	0.00441						
Adenovirus type 6	dsDNA	395	0.00583						
Avian Influenza virus	ssRNA	25	0.09140						
Avian Leukosis virus (RSA)	ssRNA	631	0.00365						
Avian Sarcoma virus	ssDNA	220	0.01047						
B. subtilis phage 029	dsDNA	70	0.03289						
B. subtilis phage SP02c12	dsDNA	100	0.02303						
B. subtilis phage SPP1	dsDNA	195	0.01181						
Bacteriophage B40-8	dsDNA	137	0.01679						
Bacteriophage F-specific	dsRNA	292	0.00789						
Bacteriophage MS2	ssRNA	182	0.01268			5	0.42400	7	0.3440
Bacteriophage Qβ	ssRNA	235	0.00980						
Berne virus	ssRNA	13	0.18420						
BLV	ssRNA	394	0.00584						
Borna virus	ssRNA	79	0.02920						
Bovine Calicivirus	ssDNA	95	0.02420						
Bovine Parvovirus	ssDNA	35	0.06580						
Canine Calicivirus	ssRNA	67	0.03450						
Canine hepatic Adenovirus	dsDNA	265	0.00869						
Cholera phage Kappa	dsDNA	634	0.00363						
Coliphage f2	ssRNA	310	0.00743						
Coliphage fd	ssDNA	23	0.0940						
Coliphage øX-174	ssDNA	25	0.09292			3	0.71000	4	0.53000
Coliphage Lambda	dsDNA	78	0.02953	87	0.02650				
Coliphage PRD1	dsDNA	20	0.11500						
Coliphage T1	dsDNA	14	0.16257						
Coliphage T2	dsDNA	9	0.25243						
Coliphage T3	dsDNA	10	0.23100						
Coliphage T4	dsDNA	13	0.17575						
Coliphage T7	dsDNA	28	0.08152			7	0.33000	10	0.22000
Coronavirus	ssRNA	21	0.11059			6	0.3700		
Coxsackievirus	ssRNA	81	0.02834			21	0.1100		
Echovirus	ssRNA	83	0.02786						
Encephalomyocarditis virus	ssRNA	55	0.04220						
Epstein-Barr virus (EBV)	ssDNA	162	0.01420						
Equine Herpes virus	dsDNA	25	0.09210						
Feline Calicivirus (FeCV)	ssRNA	64	0.03610						
Friend Murine Leukemia v.	ssRNA	320	0.00720						
Frog virus 3	dsDNA	25	0.09210						
Hepatitis A virus	dsDNA	66	0.03513						
Herpes simplex virus type 1	dsDNA	36	0.06325						
Herpes simplex virus type 2	dsDNA	35	0.06569						
HIV-1 ssRN	ssRN	280	0.00822						
HP1c1 phage	dsDNA	40	0.05760						
HTLV-1	ssRNA	20	0.11510						
Human Cytomegalovirus	dsDNA			93	0.02478				
Influenza A Virus	ssRNA	23	0.10103			19	0.11900		
Kemerovo (R-10 strain)	dsRNA	230	0.01000						
Kilham Rat Virus (parvov.)	ssDNA	30	0.07650						
Lipovnik (Lip-91 strain)	dsRNA	299	0.00770						
Measles virus	ssRNA	22	0.10510						
Mengovirus	dsRNA	162	0.01420						
Minute Virus of Mice (mvm)	ssDNA	21	0.10850						
Moloney Murine Leukemia	ssRNA	201	0.01148						
Murine Cytomegalovirus	ssDNA	46	0.05000						
Murine Norovirus (MNV)	ssRNA	76	0.03040						
Murine sarcoma vlrus	ssRNA	207	0.01113						
Mycobacteriophage D29	dsDNA	44	0.05290						
Mycobacteriophage D32	dsDNA	354	0.00650						
Mycobacteriophage D4	dsDNA	245	0.00940						
Mycoplasma virus MVL	dsDNA	105	0.02200						
Newcastle Disease Virus	ssRNA	14	0.16355	16	0.14400				
Parvovirus H-1	ssDNA	25	0.09200						
phage B40-8 (B. fragilis)	dsDNA	75	0.03070						
phage GA	ssRNA	200	0.01150						
phage phi 6	dsRNA	5	0.43000						
phage phi 6	dsRNA	7	0.31000						
Poliovirus	dsRNA	85	0.02694	42	0.05425				
Poliovirus type 2	dsRNA	121	0.01910						
Poliovirus type 3	dsRNA	103	0.02240						
Polyomavirus	dsDNA	564	0.0408						
Porcine Parvovirus (PPV)	ssDNA	23	0.10230						
Pseudorabies (PRV)	dsDNA	34	0.06760						
Rabies virus (env)	ssRNA	10	0.21930						
Rauscher Murine Leuk. v.	ssRNA	236	0.00975	959	0.00240				
Reovirus	dsRNA	148	0.01556						
Reovirus 3	dsRNA	334	0.00690						
Rotavirus	dsRNA	200	0.01150						
Rotavirus SA 11	dsRNA	89	0.02580						
Rous Sarcoma virus (RSV)	ssRNA	360	0.00640	200	0.01150				
S. aureus phage	dsRNA	65	0.03542	79	0.02900				
Semliki forest virus	ssRNA	25	0.09210						
Simian virus 40	dsDNA	83	0.02768						
Sindbis virus	ssRNA	66	0.03501			22	0.10400		
Vaccinia virus	dsDNA	18	0.12454			2	1.34650		
VEE	ssRNA	55	0.04190						
Vesicular Stomatitis v.	ssRNA	12	0.19440						
WEE	ssRNA	54	0.04300						

Ref. Wladyslaw Kowalski 2009. **Ultraviolet Germicidal Irradiation Handbook**. UVGI for Air and Surface Disinfection. 4.3 UV Rate Constant Database. pp 80, 81

### Numerous studies confirm the effectiveness of 235 nm UV-C radiation in combating infections

This is an excerpt from one of many studies that have verified the antimicrobial efficacy of UV-C lamps. Pathogens of various types are mentioned, not only airborne. The data show that relatively low exposure is sufficient to obtain good results. The advantage of SteriAir PRO lies not only in the efficacy of its lamps, but above all in its ability to treat large volumes of air, up to 120 m<sup>3</sup> per hour.

# Integrated safety in the practice

## 360° safety with Tecno-Gaz technology

Tecno-Gaz is the only company that has always been able to offer a complete and integrated infection prevention program. From the individual safety of operators and patients, to the sterilization line for instruments, to environmental and dental unit prevention, Tecno-Gaz offers products, services and training for dental and medical operators.

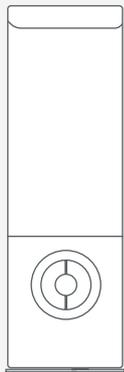


# SterilAir PRO

## BIOLOGICAL AIR TREATMENT

EN   
1<sup>st</sup> Edition

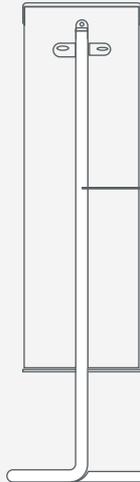
How to prevent airborne infections effectively  
and safely for patients and personnel



Art. SA210ZSA

### STERILAIR PRO DEVICE

wall mounted



Art. SA002ZSA

### STAND FOR STERILAIR PRO

Optional



#### Dimensions

**wall mounted** 82 x 27 x 11 cm

**with pedestal** 107 x 33 x 28 cm (H,W,D)

#### Weight

**wall mounted** 12,5 Kg **with pedestal** 15 kg

#### Type of operation:

continuous

#### Flow rate

120 m<sup>3</sup>/h

#### Lamps

no. 4 25W UV-C tubes G13T8  
(7 W UVGI)

#### Wavelength

253,7 nm

#### Ultraviolet Energy

69 μW/cm<sup>2</sup> at 1 m (per lamp)

#### External UV-C emission

none

#### Equipped with

- Dust filter
- Electronic programmer

#### Reflective material

Aluminium

#### Lamp life

9000 hours (1 year: 24 hours)

#### Noise level

32 dB



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