VIRO TECH

INSTRUCTION GUIDE FOR USE AND MAINTENANCE

INDEX

	Description
0	**Use and maintenance manual index**

INTRODUCTION

	Description
1	**Scope of the operating and maintenance manual**

This instruction manual is an integral part of the machine and has the purpose of providing all the necessary information for the following purposes:

- Raise the awareness of operators as regards safety matters;
- Safe handling of the machine when packaged and unpackaged;
- Correct installation of the machine;
- Thorough knowledge of the machine's operations and limits;
- Correct use in total safety;
- Correct and safe maintenance;
- Dismantling of the machine in total safety, in compliance with the regulations in force on the health and safety of workers and the environment.

The machine must be installed by a qualified competent person and according to the regulations in force. Carefully read the content of this Operating Manual and ensure that operators and maintenance staff operating and working on the machine read the relevant parts. The time dedicated to this will be fully rewarded by the correct and safe operation of the machine.

This document is based on the assumption that the systems in which the machine is to be installed are in compliance with the health and safety at work regulations in force.

The instructions, drawings and documentation contained in this Manual are of a technical confidential nature and are property of the manufacturer; they may not be reproduced in any way, in part of fully.

If this manual is amended by the manufacturer, the Customer has the responsibility of ensuring that only the updated versions are available in the points of use.

INTRODUCTION

	Description
2	**Storage of the instruction manual**

The instruction manual must be kept safely and must be handed over to new owners in case of sale throughout the lifecycle of the machine.
To help preserve the manual in good condition it must be handled with care and with clean hands, and it must not be placed on dirty surfaces.
It is forbidden to remove, tear out or arbitrarily modify any parts of the manual.
The manual must be stored in an environment away from humidity and heat, in a position near the machines to which it refers.
Upon the User's request the Manufacturer shall supply other copies of the machine's instruction manual.

INTRODUCTION

	Description
3	**Updating of the Instruction Manual**

The manufacturer reserves the right to modify the project and improve the machine without informing customers and without updating the manual already delivered to the User.

If modifications are made to a machine installed at the customer's premises, in agreement with the manufacturer, and which entail the amendment of one or more chapters of the manual, the manufacturer shall send the amended chapters to the holders of the Instruction Manual and its new overall revision.

According to the instructions that will accompany the updated documentation, the User shall replace the old chapters in the copies held with the new ones, as well as the first page and table of contents with the new revision level.

INTRODUCTION

	Description
4	**Glossary**

This paragraph lists some terms which are not commonly used or with a meaning different from the common one. The meaning of the abbreviations and pictograms used is described below. The abbreviations and pictograms are used to indicate operator qualifications and state of the machine; they provide, in a quick and univocal manner, the information necessary for the correct and safe use of the machine.

GLOSSARY (Annex I point. 1.1.1 Dir. 2006/42/EC)

HAZARD
A potential source of injury or damage to health;

DANGER ZONE
Any zone within and/or around machinery in which a person is subject to a risk to his health or safety;

EXPOSED PERSON
Any person wholly or partially in a danger zone;

OPERATOR
The person or persons installing, operating, adjusting, maintaining, cleaning, repairing or moving machinery;

RISK
A combination of the probability and the degree of an injury or damage to health that can arise in a hazardous situation;

INTENDED USE
The use of machinery in accordance with the information provided in the instructions for use;

REASONABLY FORESEEABLE MISUSE
The use of the machinery in a way not intended in the instructions for use, but which may result from readily predictable human behaviour.

OTHER DEFINITIONS

STATE OF THE MACHINE
The state of the machine includes operating modes, for example automatic running mode, jog command, stop, etc., the condition of the safety devices on the machines such as protection devices provided (or not provided), pressed emergency button, type of isolation from energy sources, etc.

RESIDUAL RISK
Risks that persist despite the adoption of the protective measures included in the design of the machine and despite the additional protective devices and measures adopted.

GENERAL INFORMATION

	Description
1	**Manufacturer's identification data**

MANUFACTURER

Aerservice S.r.l.

REGISTERED OFFICE – ADMINISTRATIVE OFFICE

Via Marconi, 1 Z.I. – 35020 – Legnaro – (PD) – Italy

EXCLUSIVE WHOLSALE UK IMPORTER

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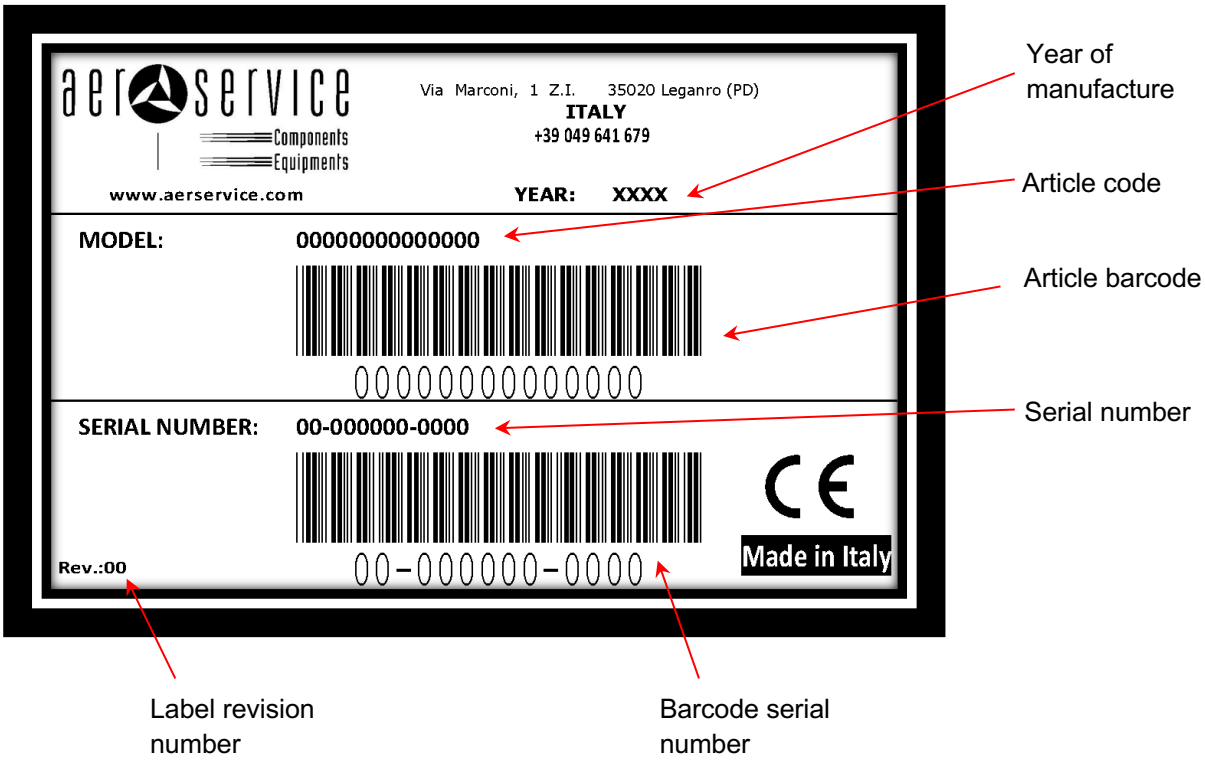
Worsley
Manchester M28 2WD
0161 793 8127
sales@wilkinsonstar.com
Wilkinsonstar247.com

AFTER SALES SERVICE
0161 728 7901
service@wilkinsonstar.com

General Information

	Description
2	**Machine identification and data plates (if present)**

Each machine is fitted with a CE plate with indelible identification data. All communications with the manufacturer or technical assistance centres must refer to the said data.



The position of the plate on the machine may vary.

GENERAL INFORMATION

	Description
3	**Declarations**

The machine is manufactured in conformity with relevant EC Directives, applicable when the machine is put on the market.

ANNEX IV Directive 2006/42/EC

The machine does not belong to the category of machines mentioned in Annex IV to directive 2006/42/EC

EC DECLARATION OF CONFORMITY

(Annex IIA DIR. 2006/42/CE)

THE MANUFACTURER

Aerservice Equipments S.r.l.
Company

Viale dell'industria, 24 Z.I. | 35020 | Padua
Address | Postcode | Province

Legnaro | Italy
City | Country

DECLARES THAT THE MACHINE

Trolley-mounted sanitizer | Viro Tech
Descrizione | Modello

_ _ _ _ | _ _ _ _
Matricola | Anno di costruzione

PROFESSIONAL SANITIZER FOR WORK ENVIRONMENTS
Denominazione commerciale

Workplace sanitization with hydrogen peroxide and ozone
Uso previsto per l'apparecchiatura

IS IN COMPLIANCE WITH THE FOLLOWING DIRECTIVES

Directive 2006/42/EC of the European Parliament and Council of 2006, May 17th on machinery and amending directive 95/16/EC.

Directive 2014/30/EC of the European Parliament and Council of 2014, February 26th on the approximation of the laws of the member States relating to electromagnetic compatibility.

Directive 2014/95/EC of the European Parliament and Council of 2014, February 26thon the approximation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

AND DECLARES THAT THE TECHNICAL FILE

Has been compiled by the manufacturer and it is kept at:

Aerservice Equipments S.r.l. in Viale dell'industria, 24 Z.I. – 35020 – Legnaro – PD – Italy

Place and date of document

Legnaro, _ _ / _ _ / _ _ _ _

D.C.: DC N-001/00001

The manufacturer

Marco Gallerino

GENERAL INFORMATION ABOUT THE MACHINE

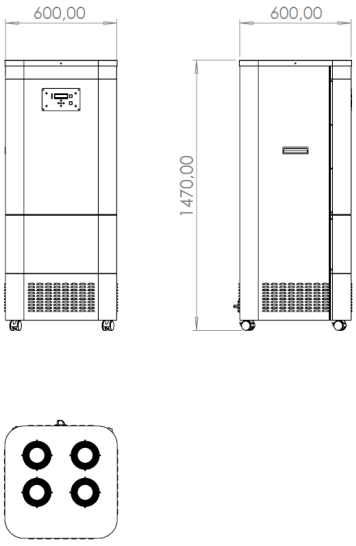
	Description
1	**General description of the machine**

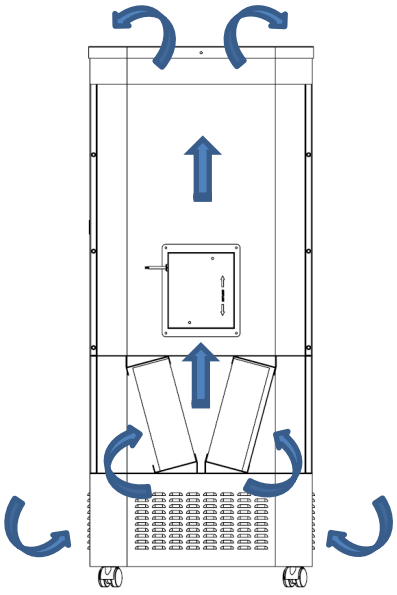
The sanitizer is recommended in environments with continuous presence of people such as small labs, production areas, offices, etc.
The plasma lamp with NCC technology, operative 24 hours a day, produces a purifying and sanitizing action in the air and on every surface by arriving in every hidden spot where the usual cleaning and sanitizing activities would not manage to.

FEATURES

The mobile sanitizing unit sucks air through the specific slots positioned all around the machine in its lower part.
After entering the machine the air is slowed down by the first plenum chamber, it passes through the metallic prefilter and diffuses in the entire chamber.
The prefiltered air goes through the ozone generator that, if it is activated, transforms the air in ozone, and then it passes through the second plenum chamber much bigger than the previous one.
Inside this chamber is installed the plasma lamp that generates an advanced oxidation process made up of hydroperoxide, superoxide and a safe oxidant at a low level suited for ozone.
At the end of the plenum are present, depending on the model, the fans, placed down stream of the system releasing the plasma and the ozone out the machine.

The machine is intended to be stationary in a place to work without interruptions, but thanks to its high maneuverability and ergonomics it is possible to move it around the workplace.





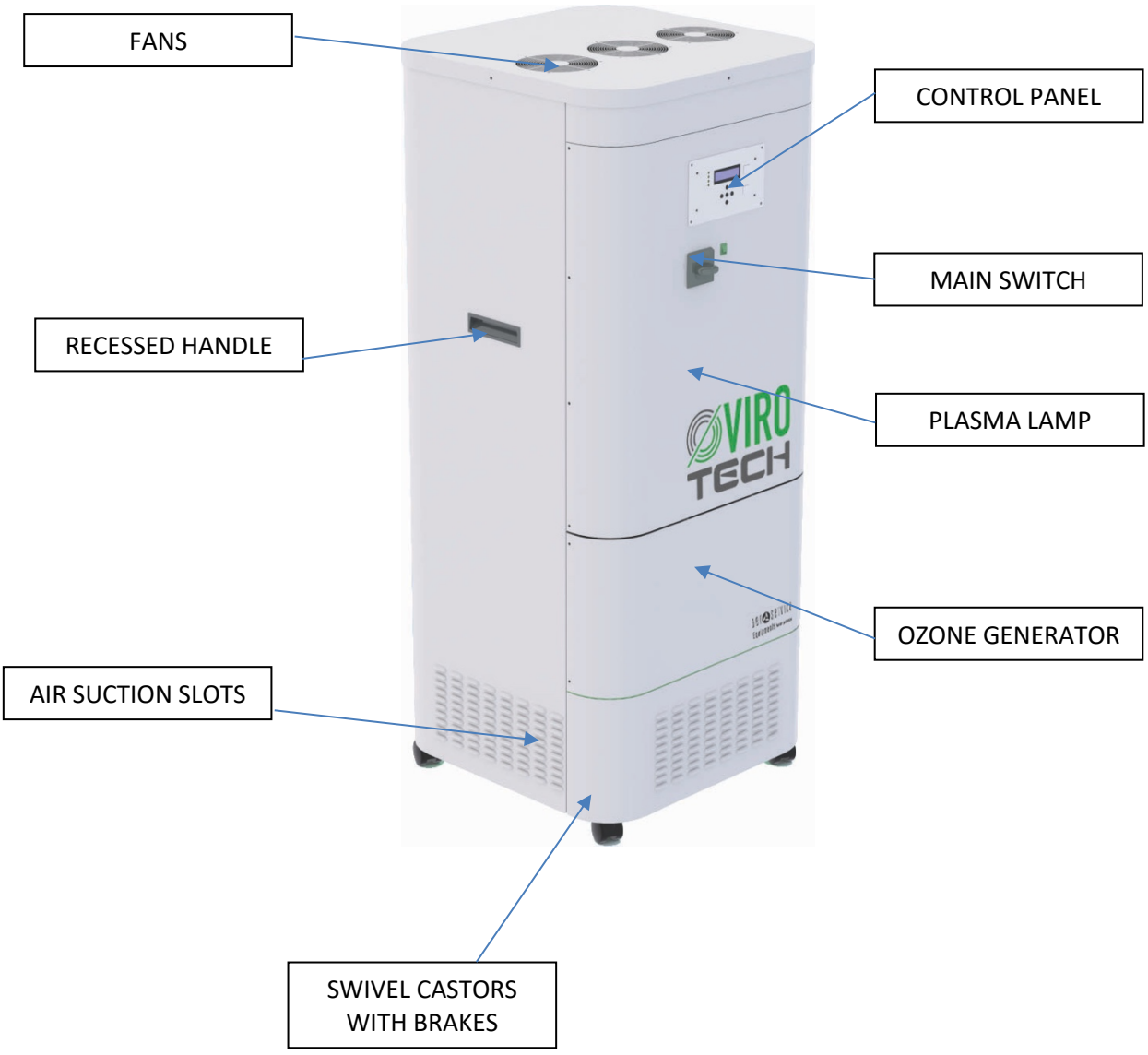
GENERAL INFORMATION ABOUT THE MACHINE

	Description
2	**Viro Tech unit's technical data**

Unit' s data		SO-132	SO-262	SO-403
Input voltage	V	230	230	230
Frequency	Hz	50	50	50
Input power	W	150	150	150
Adsorbed power	A	0.7	0.7	0.7
Air flow	m^3/h	400	800	1200
O^3 emission	$\mu g/ m^3$	750	1500	1500
O^3 emission	ppm	0.4	0.4	0.4
Max recommended area	m^2	130	260	400
Sanitation time	hours	2	2	2
Sound pressure level	dB(A)	73	73	73
Max ambient temperature	°C	60	60	60

GENERAL INFORMATION ABOUT THE MACHINE

	Description
3	**Machine's components description**



FIRST START OF THE MACHINE

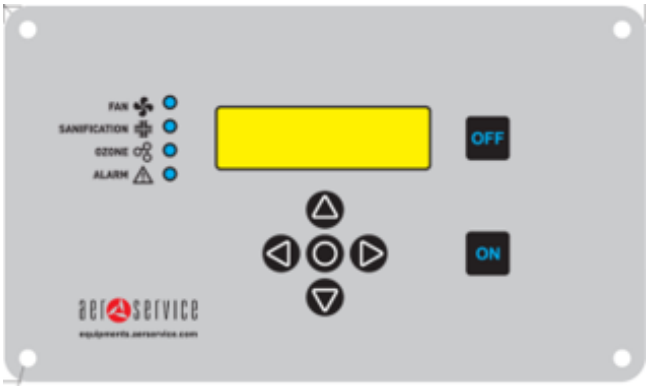
	Description
1	**Electrical connections**

The mobile sanitizing unit, in whatever version, is supplied with a 2 meters long cable.
On one side it has a Schuko plug and on the other it has an IEC socket for the connection on the machine.

The cable is provided with a wired plug.

FIRST START OF THE MACHINE

	Description
2	**Control panel and program's operating instructions**



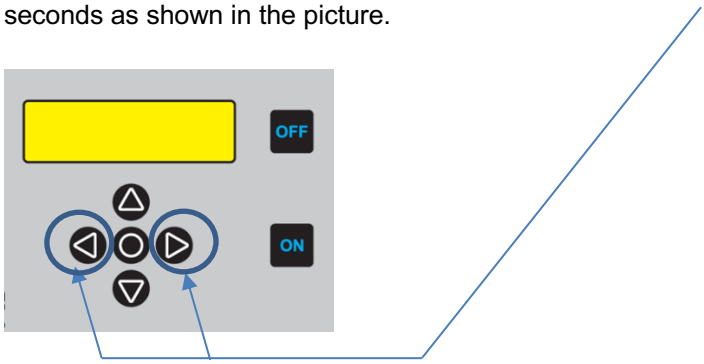
The machine is equipped with a main switch.

All functions are accessed by the control placed on the front of the machine.

At the first start of the machine it will be necessary to set the time in which the machine can produce ozone.
This parameter can be modified every time it is needed.
The machine keeps in memory the last time set and in case of starting it will use that parameter.

For safety reasons the keyboard is blocked by default from the first start, and so to do anything it is necessary to unblock it.

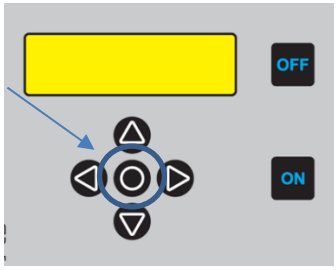
The unlocking procedure is carried out by pressing together for 5 seconds the right and the left arrows for 5 seconds as shown in the picture.



To turn on the machine a long press (1") on the **ON** button is necessary, and to turn it off a long press of the **OFF** button.

By pressing the ON button the machine starts the fans and the plasma lamp with NCC technology that produces the hydrogen peroxide. It is not possible to turn on the fans but not the plasma lamp.

To activate the ozone generation the machine needs to be already ON and so the fans need to be working.
Then it necessary to press for 10 seconds the central **O** button that will enable the start of the ozone generation.



The confirmation of the ozone start will be indicated by the following notifications:

- Acoustic signal of a few seconds;
- A red lamp placed on the top of the machine and noticeable from every side lights up; No red lamp on the picture
- A led indicator on the control panel lights up.

On the display a confirmation of the ozone generation mode will be visible as well as the countdown of the remaining time to the end of the process. The time needs to be set before starting the procedure.

To turn off the Ozone generation before the previously set time it is necessary to press the **O** button for 10 seconds.

During the ozone generation, that takes place after setting the specific function on the control panel, the presence of people or animals inside the place is not allowed. We advise to start the ozone generation mode in the evening before closing the premises. Aerate the rooms before entering them again.

In case of unintentional turning off of the machine, power outage, or other causes that could interrupt the ozone generation process, an error will be shown on the display: ALARM 02 BLACKOUT and also an acoustic signal.
To reset the system it is necessary to press the OFF button for 2 seconds.
The Blackout alarm informs/means that in this case the ozone generation has not finished its process.

MACHINE MENU

AERSERVICE SYSTEM READY: it means that the machine is turned on and ready to start;

SET T. OZONE: it indicates the time (expressed in hours) of the ozone generation cycle. To change this parameter the user just needs to press the right or the left arrow (respectively to increase and decrease) and then press the **O** button for 2 seconds to confirm;

TOTAL HOURS: It indicates the time (expressed in hours) that the machine has been ON. This data includes both when the machine was working only with the plasma lamp and when the ozone generator was on;

OZONE HOURS: It indicates the time (expressed in hours) that the ozone generator was on:

LANGUAGE: it is possible to choose the interface language (Italian or English);

SERIAL NUMBER: in case of assistance this number needs to be communicated.

RISKS CONNECTED WITH USE OF THE MACHINE

	Description
1	**Residual risks of the plasma lamp**

With the UV lamp in function unplug the unit from the power supply before proceeding to any maintenance.

The special UVX germicidal bulb used in the lamp contains a very small amount of mercury. Contact your local waste management center for a proper disposal procedure.

Hydrogen peroxide is the only biocidal agent composed only of water and oxygen. Its oxidizing power makes it an excellent ally in ambient sanitation.
The use of hydrogen peroxide is:
• **Effective**: guarantees 99.99% decontamination and disinfection, thanks to its very small molecular size, it can reach and spread over the entire surface of the treated area;
• **Natural**: it does not contain chemicals that are present in other products such as, for example, bleach and ammonia.
• **Environment-friendly**: once its action is complete, the hydrogen peroxide microparticles turn into oxygen. It does not produce Volatile Organic Compounds (VOC) and has no polluting power;
• **Safe**: its use neither generates humidity nor corrosion, therefore it does not spoil surfaces. Furthermore, if used in the correct way, it is a non-toxic and non-carcinogenic substance for sanitation operators and for any other people.

Hydrogen peroxide is known for its action: • **Bactericide** • **Fungicide** • **Virucide** • **Sporicide**

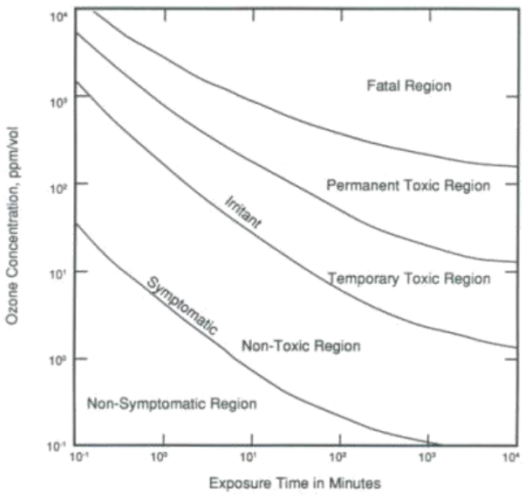
Hydrogen peroxide is therefore able to sanitize workplaces from potentially harmful organic substances such as: • **Bacteria (Gram-negative and Gram-positive)** • **Viruses** • **Pathogens** • **Pollutants** • **Spores**

RISKS CONNECTED WITH USE OF THE MACHINE

	Description
2	**Residual risks of the ozone generator**

Human tolerance to ozone

Ozone is a toxic gas and after inhalation it can cause diseases if inhaled in sufficient quantities.
Humans can endure limited ozone exposure, symptoms such as dry mouth and throat, cough, headache and chest constriction and close to lethal limits, when the concentration of ozone increases, serious problems will follow.
Limits * 0.06 ppm for 8 hours a day, 5 days a week (ppm = parts per million) * 0.3 ppm for up to 15 minutes. These limits are a maximum acceptable concentration (CMA), these concentrations are much higher than the olfactory level at which ozone can be smelled.
The following diagram provides information on times of exposure to different concentrations and their influences on humans.



Ozone toxicology

In higher concentrations, ozone can cause health effects after inhalation.
Symptoms such as mucosal irritations and headaches often follow.
These symptoms can also occur during photochemical smog episodes.
Higher concentrations (> 50 ppm) and long-term exposure (> 30 min) can be fatal. However, staying in a room with this type of concentration is almost impossible.
The long-term effects of ozone exposure are not fully known, but a reduction in lung capacity and an increase in lung disease should be considered.
To prevent the above health risks, a maximum amount of ozone has been established for the areas where ozone is used.
This is the so-called maximum permissible concentration, or CMA value. This value describes the maximum concentration of a substance to which a human can be exposed for a certain period of time.
For a normal five day, eight hour a day work week, ozone has a CMA value of 0.06 ppm (parts per million or mg / L). For 15 minutes, the CMA value is 0.3 ppm.
Ozone can be measured in ppm or ppb (parts per billion or µg / L), according to various principles.
With these measurements, you can monitor the ozone concentration in a system.
When the CMA values are reached near the ozone generator, an alarm is issued.

Ozone has a very characteristic odor, which quickly reveals the violation of the CMA value. The level at which ozone can be smelled is around 0.02 ppm.

Ozone decomposition

When ozone is produced it decays quickly because it is an unstable compound with a relatively short halving time.
The halving time of ozone in water is much shorter than in air (see table 1). Ozone decays in drinkable water (pH: 6-8.5), partially in reactive OH radicals.
Hence, the evaluation of an ozone-based process always involves the reaction of two species: ozone and OH radicals.
When these OH radicals are dominant particles in the solution, it is called the advanced oxidation process (POA).

Halving of ozone in OH radicals in natural waters is characterized by an initial rapid decrease of ozone, followed by a second phase in which ozone decreases by first order kinetics.
Depending on the quality of the water, the halving time of ozone ranges from seconds to hours.
Factors that influence the decomposition of ozone in water are temperature, pH, environment and concentration of dissolved material and UV light.
The main factors influencing ozone decomposition are discussed below.

Aria	
Temp (°C)	Dimezzamento
-50	3 mesi
-35	18 giorni
-25	8 giorni
20	3 giorni
120	1,5 ore
250	1,5 secondi

Influencing factors:
Temperature: it has an important influence on the halving time of ozone. Table 1 shows the halving time of ozone in air and water. In water the halving time of ozone is much shorter than in air, in other words ozone decomposes faster in water. Ozone solubility decreases at higher temperatures and is less stable. On the other hand, the reaction rate increases with a factor of 2 or 3 every 10° C [5,6]. Mainly the ozone dissolved in water cannot be applied at a temperature above 40° C, because at this temperature the halving time of the ozone is very short.
Table 1: halving time of ozone in air and water at different temperatures

MACHINE MAINTENANCE

	Description
1	**Filters replacement**

The sanitizer is equipped with a metallic prefilter positioned before the ozonizing cell.
Its scope is to block large size volatile materials and particulates.
Its maintenance is carried out by pulling it out from the machine, cleaning it with compressed air and under running water.
Before relocating the filter ensure that it is completely dried.

MACHINE MAINTENANCE

	Description
4	**Malfunctions**

FAULT TYPE	CAUSE	ACTION
STARTING PROBLEMS	Low voltage supply	Check the motor data plate and the main power supply
	No power supply	Check the connection of the plug and/or socket
FAILURE TO START	No power supply	Check the connection of the plug and/or socket
	Motor is burned out	Replace extractor fan
WARNING LIGHT ON	Ozonizing cell is blocked	Clean the ozone generator
		Control the electrical connections
		Replace the cell
NO PRODUCTION OF HYDROGEN PEROXIDE	Broken UV lamp	Replace the UV lamp
NO PRODUCTION OF OZONE	Circuit board on the generator is burnt	Replace the ozone generator

MACHINE MAINTENANCE

	Description
5	**Maintenance program**

ROUTINE CHECKS

	TYPE OF VERIFICATION OR MAINTENANCE	METHOD	CADENCE	DATA VERIFICA E NOME MANUTENTORE 1	2	3	4	5
1	GENERAL CHECK OF THE CONDITION OF THE SANITIZER	VISUAL	DAILY					
2	CLEANING	MANUAL	See note A					
3	CHECK OF FILTER CLOGGING	VISUAL OR MANUAL	600 HOURS See note B					

NOTE A

The cleaning intervals vary according to the type of fluid conveyed and its concentration and also according to the type of work environment in which it is used. The end user must therefore define a cleaning interval suitable to always keep the machine perfectly clean; the accumulation of material on the fixed parts must not be more than 5 mm thick.

NOTE B

The cleaning or replacing of the filters depends on clogging. Since the filters capture large size volatile substances and dusts as well as little paper scraps, the clogging and the necessity to clean filters is tightly linked with the place where the machine is used.

WILKINSON STAR

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