PHS

innovating health

PURITY

value of chain

ULTRAVIOLET & OZONE DISINFECTION ROBOTS

JOINTLY DEVELOPED WITH

KLAIN ROBOTICS S.R.L.

Headquarter Via Gian Battista Cacciamali, 67, 25125
Brescia BS (Italy)

info@klainrobotics.com - www.klainrobotics.com

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PRO HEALTH
SYSTEM

CONTACT US

AUTOGNITY S.R.L.

registered office: Via del Popolo, 6 05018 Orvieto, TR (Italy)
operational office: Via A. Manzoni, 82 06123
Ponte San Giovanni, PG (Italy)
operational office: Via Carbonia, 10 56023
Visignano, PI (Italy)

info@autognity.com - www.autognity.com

The health of others is our health

PHS

innovating health

Uncompromising excellence and a commitment to care for humans

UVGI

Is a very effective method of destroying microorganisms. An increase in effectiveness can be achieved by using reflection. Aluminum has the highest reflection rate compared to other metals, and is very useful for reflecting UV rays. PHS is a disinfection system which provides for the interaction of UVGI lamps combined with an ozone diffuser that can be housed on board a MiR mobile vehicle.

guarantee **10** years

online training

remote assistance

WE TREAT

Most Pathogenic Diseases and Vectors Contracted by Touching Surfaces (Fomite Transmission): **SARS**, MMR (Measles Mumps Rubella), **RSV** (Respiratory Syncytial Virus), Rhinovirus, **Influenza**, **Coronavirus**, Rotavirus, Adenovirus, Norovirus, **Clostridium difficile** (C. diff), **hepatis-C**, **MRSA**, **VRE**, **CRE**, Ebola, Parainfluenza, **Acinetobacter**, **Enterobacter**, **Klebsiella**, MERS, **Pseudomonas**, Salmonella, Serratia, Staphylococcus, Stenotrophomonas, **Mycobacterium**, Pseudomonas, Necrotizing fasciitis, **E. coli**, Shigella, Norwalk Virus, Yellow Fever, Marburg and more. Many surface transmission diseases are now designated as being Multidrug-Resistant (MDR) ex. MDR-TB. Our PHS germicidal sanitizer is effective at destroying all of these contagious vectors in ambulances, clinics, schools and so much more.

HOW

UV-C DISINFECTION

UV light provides rapid, effective inactivation of microorganisms through a physical process. When bacteria, viruses and protozoa are exposed to the germicidal wavelengths of UV light, they are rendered incapable of reproducing and infecting. Microorganisms are inactivated by UV light as a result of damage to nucleic acids. The high energy associated with short wavelength UV energy, primarily at 254 nm, is absorbed by cellular RNA and DNA. This absorption of UV energy forms new bonds between adjacent nucleotides, creating double bonds or dimers. Dimerization of adjacent molecules, particularly thymine, is the most common photochemical damage. Formation of numerous thymine dimers in the DNA of bacteria and viruses prevents replication and inability to infect.

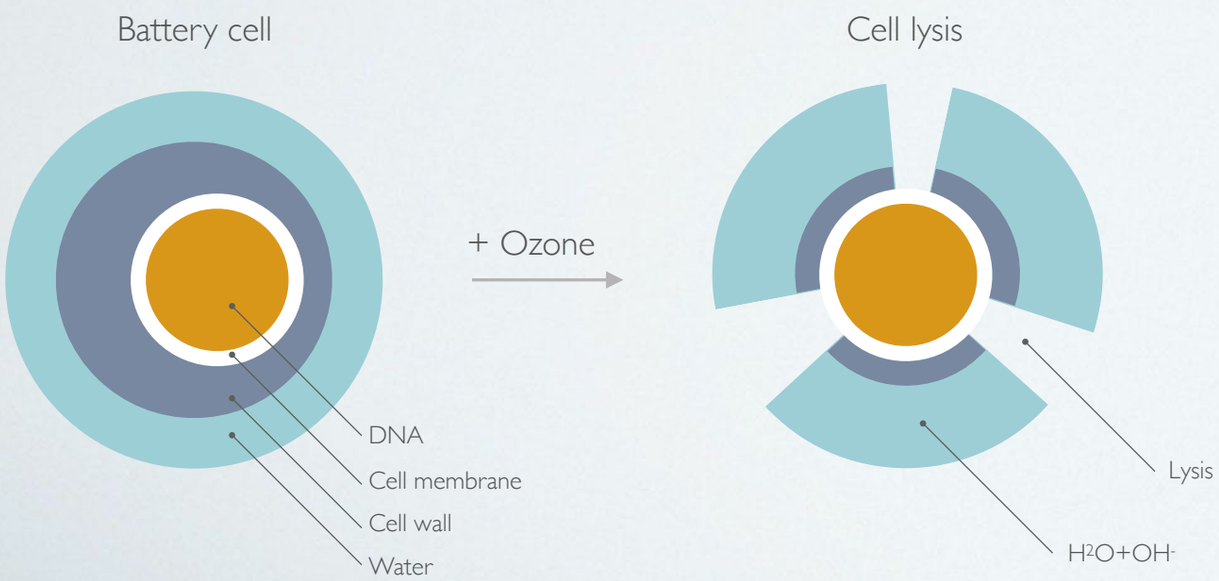
	Chlorine disinfection	UV disinfection
Disinfection by-products (DBPs)	YES	**NO**
Chemical Residual	YES	**NO**
Corrosive	YES	**NO**
Community Safety Risks	YES	**NO**
Cryptosporidium and Giardia effectiveness	NO	**YES**

- UV is a chemical-free process
- UV requires no transportation, storage or handling of toxic or corrosive chemicals: a safety benefit for plant operators and the surrounding community
- UV treatment creates no carcinogenic disinfection by-products that could adversely affect quality
- UV is highly effective at inactivating a broad range of microorganisms including chlorine-resistant pathogens like Cryptosporidium and Giardia
- UV can be used to break down toxic chemical contaminants while simultaneously disinfecting.
- Annual lamp replacement and electrical consumption comprise the operating costs of UV disinfection
- UV eliminates or reduces the immediate safety threat of chlorine gas without creating new long term costs associated with chemicals, transportation and delivery
- Costs for leak response, administration, risk management and emergency planning and operator training are minimized and/or eliminated with UV

HOW

OZONE DISINFECTION

Microorganisms cause issues in various places, in a clinical setting bacteria can cause dangerous outbreaks. Ozone can be used as a chemical disinfectant to kill bacteria and viruses with low ozone concentrations. The contact time is altered depending on the desired deactivation grade. Non-touch technologies include the usage of UV-lamps and chemicals dispersed as an aerosol or gas which deactivates microorganisms. Compared to other treatment methods for air disinfection, ozone can efficiently disinfect large air volumes, neutralizing micro-organisms, including viruses. This makes it ideal for use in medical applications, for example in hospitals or doctors waiting rooms. An important factor that enables savings is the time the cleaning agent can actively deactivate bacteria.



- UV cleaning systems often have a very short time window to irradiate the air and therefore needs to add a lot of energy to ensure sufficient deactivation in this short time, wiping with a cleaning solution is limited by the time it takes for the surface to dry while ozone will continue to attack bacteria until it naturally decomposes or is removed. This enables ozone solutions to increase energy saving significantly.
- Ozone is produced on-site from the oxygen in ambient air, an abundant free-of-cost raw material. Nothing to purchase, transport and store.
- No handling and refills needed.
- No waste.
- No residues.
- Our combined ozone systems also save time and money.
- The operation is automatic with minimal maintenance and very affordable operating cost.

PHS

GENERAL FEATURES

1. 360° lidar sensor for precise automatic calculation of UVC radiation dose and disinfection time, to ensure consistent and thorough disinfection.

2. Motion sensor for automatic device switch off.

3. Bulbs: bulbs provide UVC radiation with a wavelength of 254 nm to eliminate pathogens in direct and shadow areas jointly with ozone diffusion

4. Built-in fan for cooling the device.

5. Integrated WiFi and 4G/5G.

6. Operating temperature range 0-80°C.

7. There is no limit for use time.

8. The device can be connected via a power cable.

9. The device can be cleaned with a damp cloth and using a mild detergent.

ELECTROMAGNETIC COMPATIBILITY

The device is intended for use in an electromagnetic environment.

SAFETY FEATURES

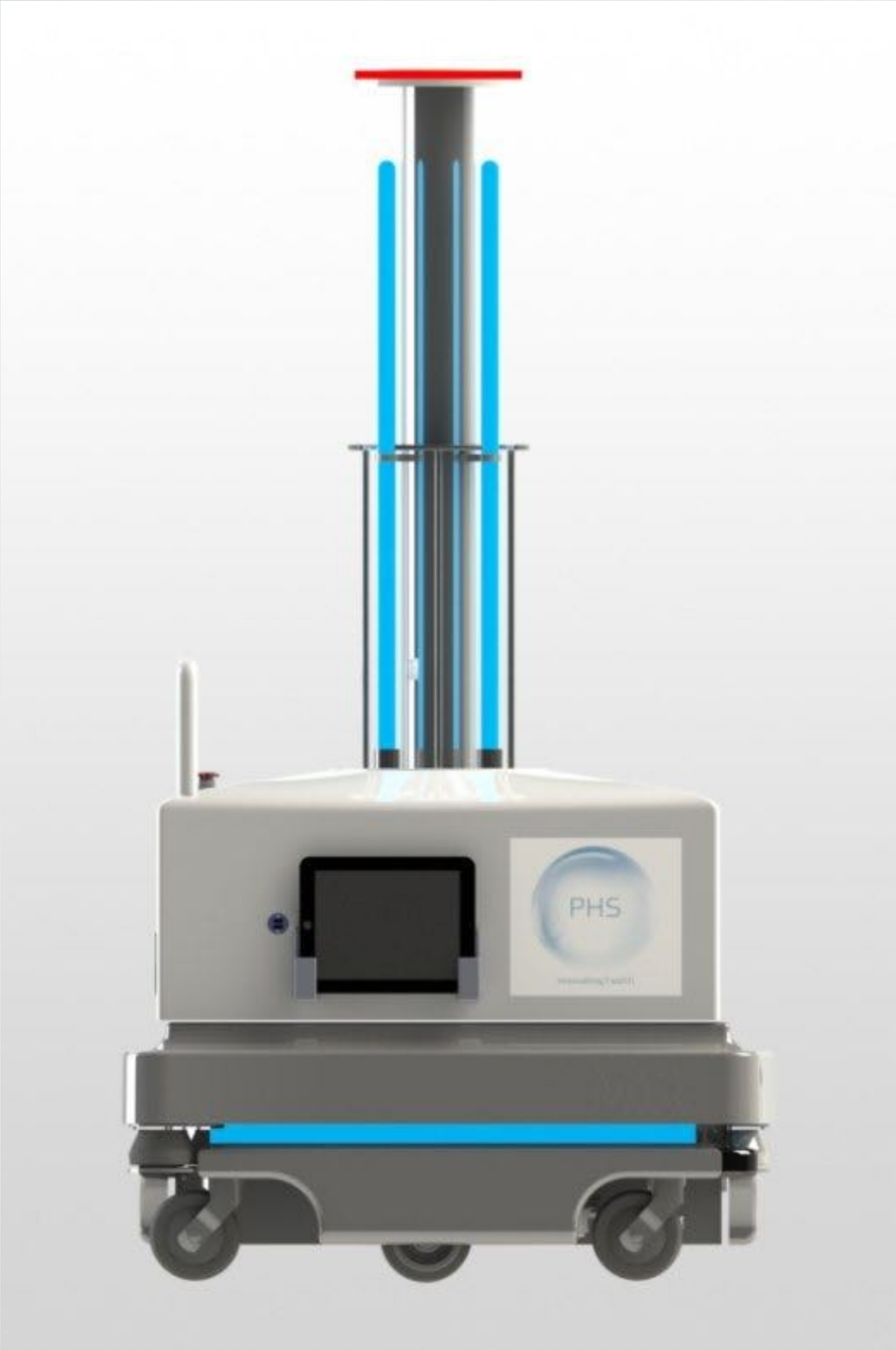
- Motion detectors covering 360°. In case of movement detection during disinfection cycle, UVC lamps are immediately turned off.
- According to LV directive, **2014/35/EU**
- According to RoHS directive, **2011/65/EU**
- According to ErP directive, **2009/125/EC**
- People recognition system
- Adjustable start delay
- Emergency stop button
- Safety glasses for protection against UV rays
- LEDs indicating PHS device status

UV-C +
Ozone +
MiR =
PHS-M

PHS-M® mobile robot

Is the latest constant wave UV-C surface and air disinfection technology designed specifically for all areas of the hospital and healthcare environment. Incorporates unique design features that reduce shadowing and is combined with ozone. The robot platform is characterized by an autonomous guidance system making it perfect and suitable for disinfecting every operating space.

Height	1650 mm
Width	580 mm
Lenght	890 mm
Total weight	175 kg
Power requirements for battery recharge	AC 220 V, 50 Hz, 17 A max.
Battery duration	8 hours continuously working
Battery recharge time	3 hours
Bulbs tube dimensions	diameter 15 mm, length 843 mm,
Bulbs power	41 W each
UV emission at 254 nm	150 μW/cm² - 16 W

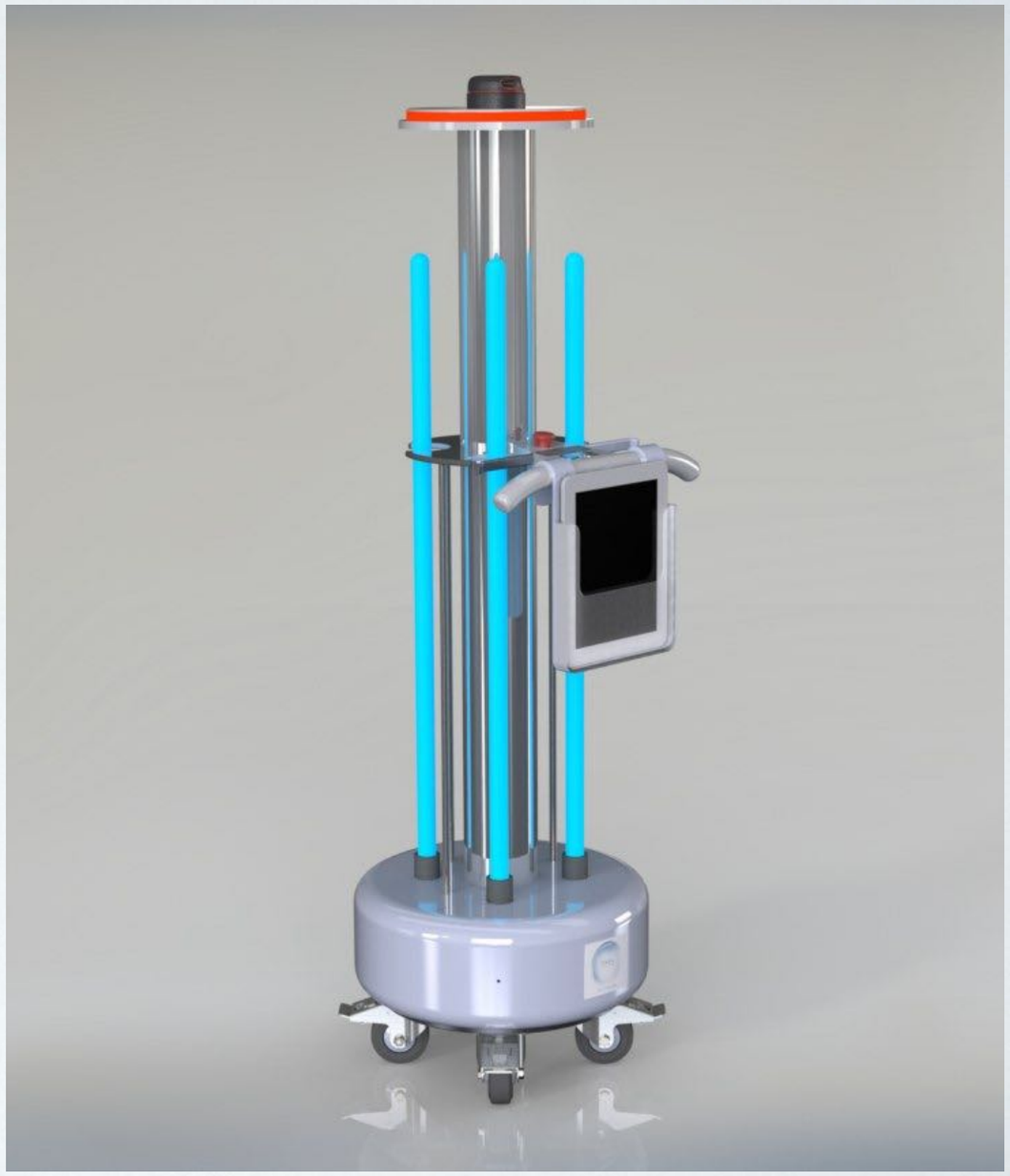

PHS

UV-C +
Ozone =
PHS-S

PHS-S® stable robot

Is a high-output UV disinfection robot using unique room mapping technology to deliver a fast and effective germicidal dose of continuous wave UVC energy killing germs and pathogens when and where is required. Is intelligent and completely removes the guess work and ineffectiveness of regular cleaning.

Height	1300 mm
Width	400 mm
Lenght	400 mm
Total weight	75 kg
Power requirements	AC 220 V, 50 Hz, 150 W max.
Bulbs tube dimensions	diameter 15 mm, length 843 mm,
Bulbs power	41 W each
UV emission at 254 nm	150 $\mu W/cm^2$ - 16 W



UV-C + Ozone + portable = PHS-P

PHS-P® portable robot

The smallest most powerful commercial grade UVC room sanitizer. Due to its size it is ideal for sanitizing ambulances, bathrooms, lockers, garages, restroom stalls, kitchens, small offices, cabins, kennels, cages, store rooms, waiting rooms, examining rooms, showers, smaller hotel rooms, play rooms, dressing rooms, basements, attics, closets, dental offices, laboratories, garbage areas, school buses, vans, trucks, RV trailers, campers and much more!

Height	750 mm
Width	200 mm
Lenght	200 mm
Total weight	9 kg
Power requirements for battery recharge	AC 220 V, 50 Hz, 6 A max.
Battery duration	4 hours continuously working
Battery recharge time	3 hours
Tripod dimensions	470 mm - 750 mm
Bulbs tube dimensions	diameter 15 mm, length 436 mm,
Bulbs power	21 W each
UV emission at 254 nm	72 $\mu W/cm^2$ - 7,3 W

PHS

destroys
99%
of pathogens

disinfection time
8-18
min

scanning
360°
high precision

radiation
254nm
wavelength

built-in
fan for
convection

integrated WiFi
4G/5G

Operating
temperature range
0-80°

washable with
a damp cloth and
a mild detergent

PHS

- combined with ozone for shadow areas
- easy to transport
- Auto room-entry detection
- Auto-generates cleaning reports
- eco mode
- autonomous guidance
- Motion detectors covering 360°
- adjustable start delay

PHS

LEDs indicating PHS device status

preventing HAIs and containing outbreaks

safety glasses for protection against UV rays

ozone depletion

floor-to-ceiling disinfection

immediate integration into disinfection processes

remotely operated via tablet and smart app

contactless disinfection

MAIN TECHNOLOGIES

MIR

The MiR200 is a safe, cost-effective mobile robot that quickly automates internal transportation and logistics. The robot optimizes workflows, freeing staff resources and increase productivity reducing costs and without facility alteration. The robot safely maneuvers around people and obstacles, through doorways and in and out of elevators with built-in sensors and cameras. The robot's mission can be easily adapted using a smartphone, tablet or computer connected to the network.

Lithium-based battery

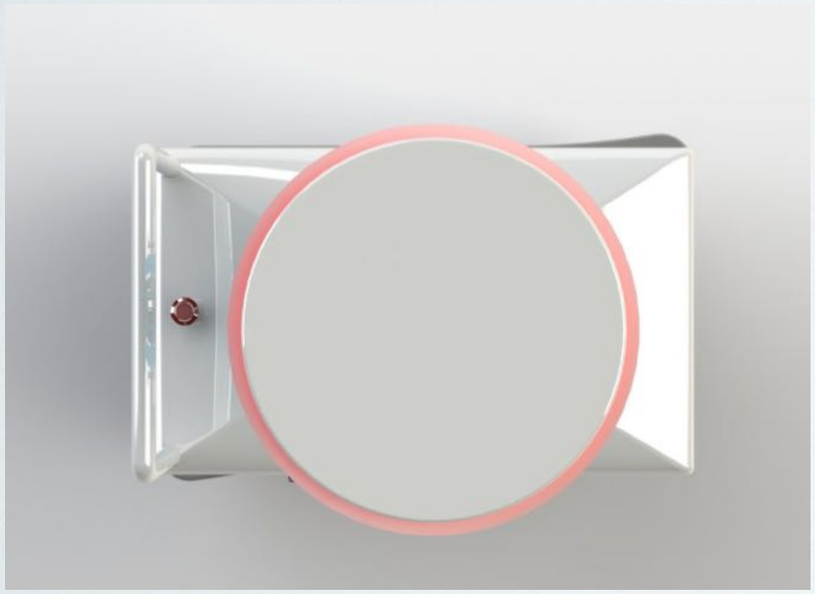
Lithium-ion is an eco friendly and low maintenance battery, an advantage that most other chemistries cannot claim. There is no memory and no scheduled cycling is required to prolong the battery's life. In addition, the self-discharge is less than half compared to nickel-cadmium, making lithium-ion well suited for modern fuel gauge applications. It is lightweight and compact with high energy density used for a variety of products.

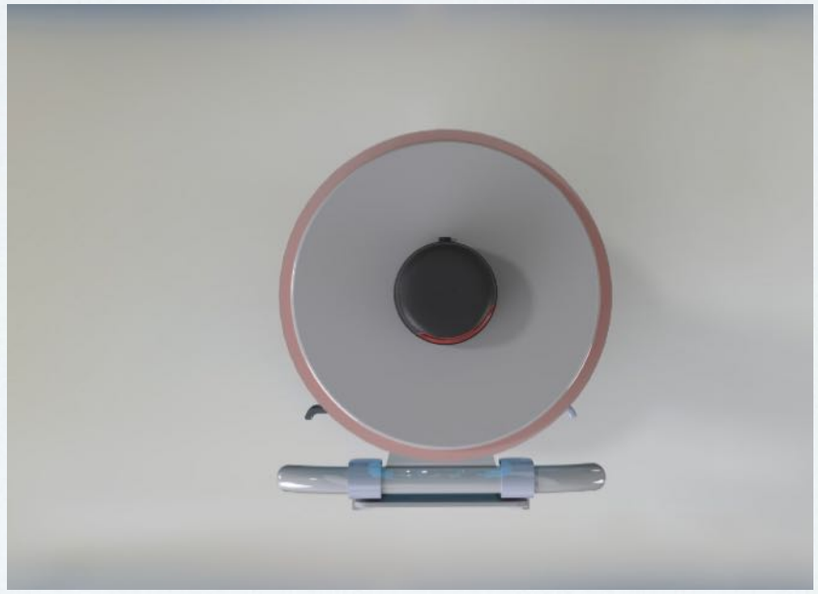
UV C bulbs combined with ozone

The low pressure UV lamps exploit UVC light to get the rapid sterilization of bacteria, molds, fungi, viruses and microorganisms both in air and in water. About 40% of electricity is converted directly into UVC radiation with monochromatic emission at 254 nm for germicidal applications. Ozone is the strongest oxidizing agent available: it reacts with a multitude of organic compounds and can oxidize and disinfect air and water.

Software

The software automatically determines the environment size and computes the duration of the disinfection cycle. PHS is operated by a tablet controlled by an operator. Once the cycle is completed, PHS automatically shuts down and notifies the operator about the status of the disinfection process.





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