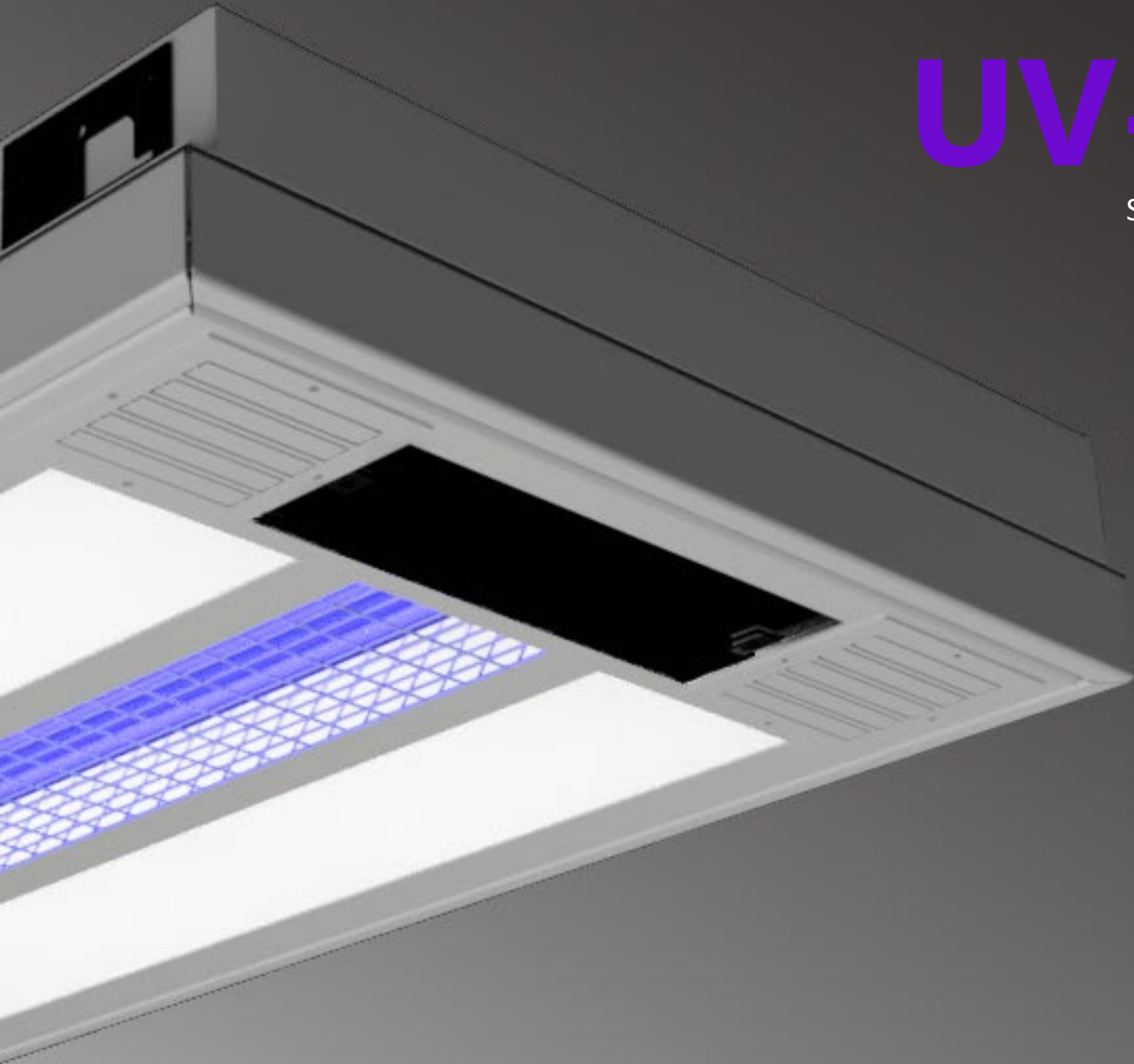


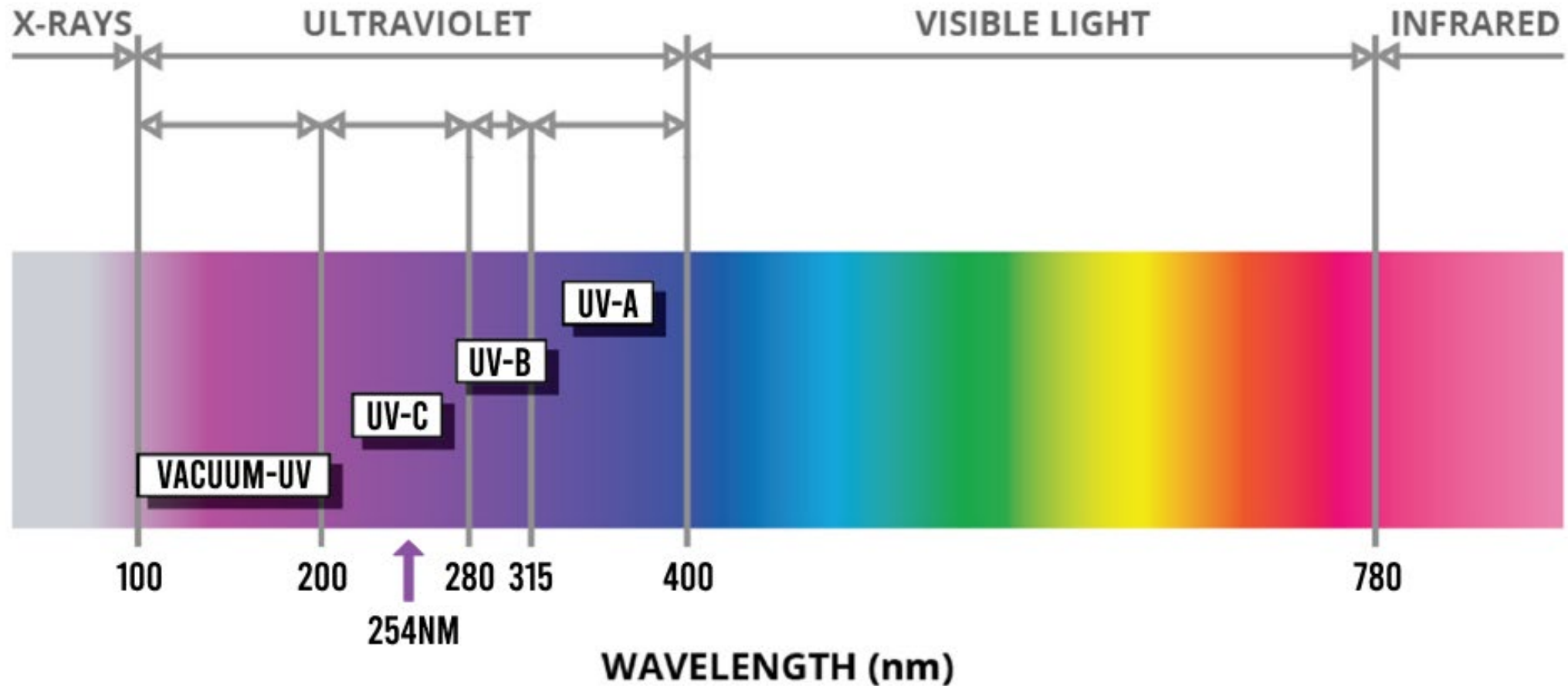
UV-C Products

Sanitize and disinfect your facilities and equipment with light



NEMESIS

ELECTROMAGNETIC SPECTRUM



THE DIFFERENT TYPES OF UV

What is UV light?

- Ultraviolet light is a type of electromagnetic radiation. It is transmitted in waves or particles at different wavelengths and frequencies. This broad range of wavelengths is known as the electromagnetic spectrum.

UV-C vs UV-A and UV-B

- UV-A, or near UV (315-400nm)
UV-B, or middle UV (280-315nm)
UV-C, or far UV (180-280nm)
- Of the total solar UV energy that reaches the equator from the sun, 95 percent is UV-A, and 5% is UV-B.
- No measurable UVC from solar radiation reaches the earth's surface. This is because ozone, molecular oxygen, and water vapor completely absorb the shortest UV wavelengths.
- UV-A and UV-B has the ability to inactivate bacteria, but is unable to inactivate viruses.

Why UV-C?

- UV-C has been a proven disinfectant for over 100 years and has been extensively used for the past 40 years in disinfecting drinking water, wastewater, and air. All bacteria and viruses that have been tested respond to UV-C at the appropriate doses. With this information available, UV-C is recommended as a secondary line of defense against microorganisms. What germs are left behind after an initial cleaning will be inactivated by UV-C rays impacting DNA and RNA of microbes, being left unable to reproduce or infect anyone.
- A frequently disputed topic, prolonged exposure to UV-C can cause damage to the skin and eyes. UV-C can not be used in occupied areas.
- UV-C is measured in Joules, which is a cumulative measurement of the total amount of energy delivered.
- UV-C does not penetrate through glass (with the exception of quartz), polycarbonate, or acrylic.

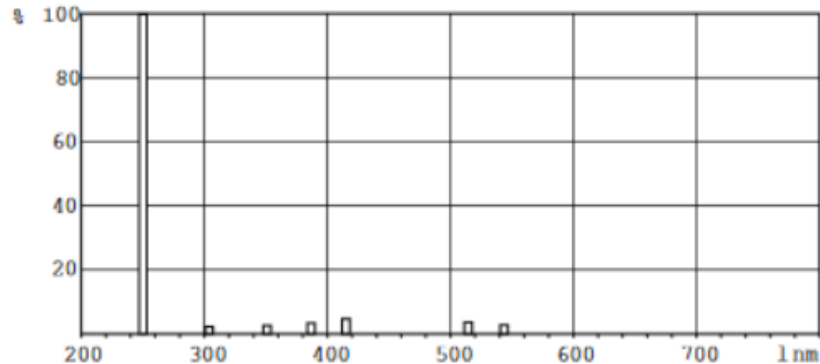


UV-C STUDIES ON DISINFECTION TIMES

UV Dose (90% Kill Rate)			
Microbe	Dose (J/m ²)	k	
Coronavirus	7	0.351	
Bernervirus (Coronaviridae)	7	0.321	
Murine Coronavirus (MHV)	15	0.134	
Canine Coronavirus (CCV)	29	0.081	
Murine Coronavirus (MHV)	29	0.081	
SARS Coronavirus Cov-P9	40	0.058	
Murine Coronavirus (MHV)	103	0.022	
SARS Coronavirus (Hanoi)	134	0.017	
SARS Coronavirus (Urbani)	241	0.009	
Bacteria	Dose	k	
Bacillus anthracis	45.2	0.051	
B. megatherium sp. (spores)	27.3	0.084	
B. megatherium sp. (veg.)	13	0.178	
B. paratyphosus	32	0.072	
B. subtilis	71	0.032	
B. subtilis spores	120	0.019	
Campylobacter jejuni	11	0.209	
Clostridium tetani	120	0.019	
Corynebacterium diphtheriae	33.7	0.069	
Dysentery bacilli	22	0.105	
Eberthella typhosa	21.4	0.108	
Escherichia coli	30	0.077	
Klebsiella terrifani	26	0.089	
Legionella pneumophila	9	0.256	
Micrococcus candidus	60.5	0.038	
Micrococcus sphaeroides	100	0.023	
Mycobacterium tuberculosis	60	0.038	
Neisseria catarrhalis	44	0.053	
Phytomonas tumefaciens	44	0.053	
Pseudomonas aeruginosa	55	0.042	
Pseudomonas fluorescens	35	0.065	
Proteus vulgaris	26.4	0.086	
Salmonella enteritidis	40	0.058	
Salmonella aratyphi	32	0.072	
Salmonella typhimurium	80	0.029	
Sarcina lutea	197	0.012	
Serratia marcescens	24.2	0.095	
Shigella paradytenteriae	16.3	0.141	
Shigella sonnei	30	0.077	
Spirillum rubrum	44	0.053	
Staphylococcus albus	18.4	0.126	
Staphylococcus aureus	26	0.086	
Streptococcus faecalis	44	0.052	
Streptococcus hemolyticus	21.6	0.106	
Streptococcus lactus	61.5	0.037	
Streptococcus viridans	20	0.115	
Senteritidis	40	0.057	
Vibrio cholerae (V.comma)	35	0.066	
Yersinia enterocolitica	11	0.209	
Yeasts	Dose	k	
Baker's yeast	39	0.06	
Brewer's yeast	33	0.07	
Common yeast cake	60	0.038	
Saccharomyces cerevisiae	60	0.038	
Saccharomyces ellipsoideus	60	0.038	
Saccharomyces sp.	80	0.029	
Mold Spores	Dose	k	
Aspergillus flavus	600	0.003	
Aspergillus glaucus	400	0.003	
Aspergillus niger	1320	0.0014	
Mucor racemosus A	170	0.013	
Mucor racemosus B	170	0.013	
Oospora lactis	50	0.046	
Penicillium digitatum	440	0.004	
Penicillium expansum	130	0.018	
Penicillium roqueforti	130	0.018	
Rhizopus nigricans	1110	0.002	
Virus	Dose	k	
Hepatitis A	73	0.032	
Influenza Virus	36	0.064	
MS-2 Coliphase	186	0.012	
Pollio virus	58	0.04	
Rotavirus	8	0.028	
Protozoa	Dose	k	
Cryptosporidium parvum	25	0.092	
Giardia lamblia	11	0.209	
Algae	Dose	k	
Bleu Green	3000	0.0008	
Chlorella vulgaris	120	0.019	



UV-C Lamp Information



01

We use 55W High output lamps, such as Philips and Ushio, in all of our UV-C products. Our lamps produce no ozone.

04

Long and reliable lifetime allows maintenance to be planned.

02

These lamps are germicidal lamps that produce an almost constant UV output of 253.7nm over their complete lifetime.

05

Useful life of 9,000 hours. Depreciation at useful lifetime is only 10%.

03

These lamps have been in use for the past 40 years for germicidal purposes.

06

UV-C radiation has no visible light. Radiators (lamps) have a phosphorous additive that allow them to be visible when operating. This is a safeguard that show when the lamps are operational.

UV-C PRODUCTS OVERVIEW

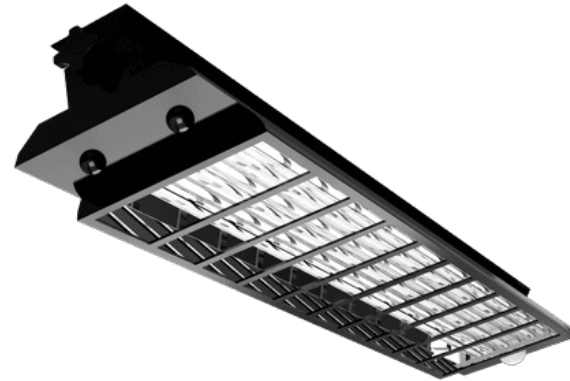
Hydra Air Extreme (UHY)



Description

One of the flagship products in our UV-C lineup. With direct UV-C disinfection, ambient light, and UV-C air return disinfection, the Hydra Air Extreme is an all-in-one disinfection lighting solution.

Typhon (UTY)



Description

Our modular fixture that works as a standalone disinfection luminaire, or as an attachment to existing structures.

UV-C PRODUCTS OVERVIEW

Tower (UTOW)



Description

The ultimate disinfection solution. Utilizing the Typhon (UTY) fixture, the tower provides effortless movement to quickly disinfect rooms on a per basis.

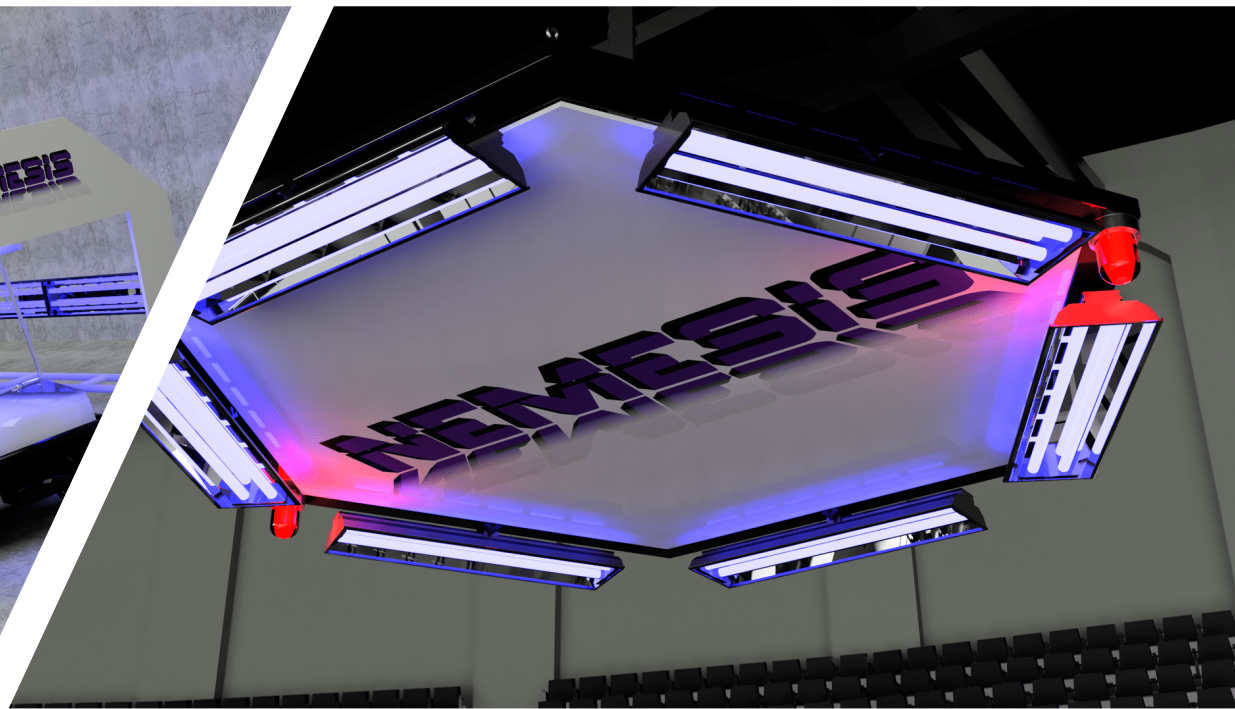
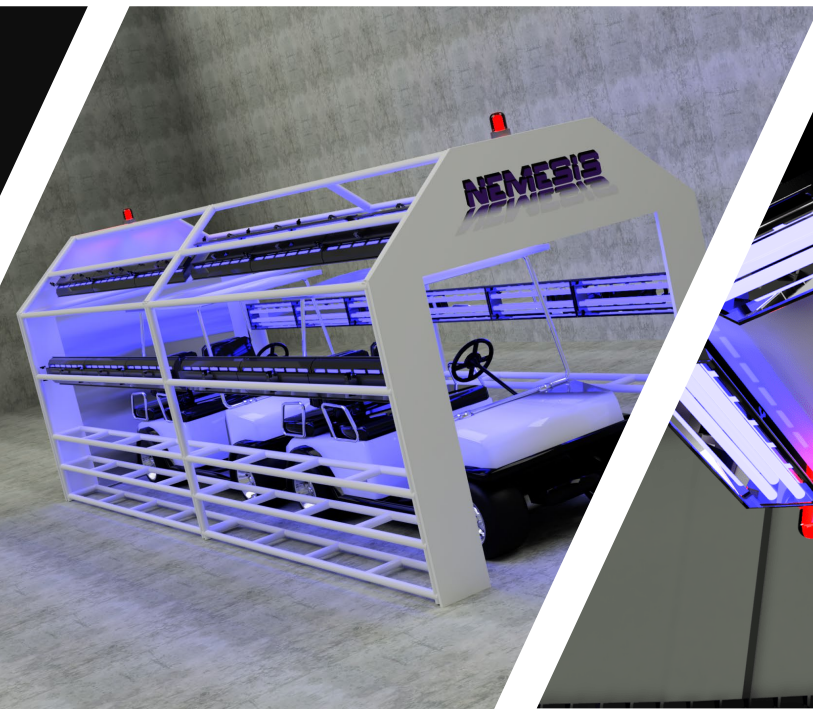
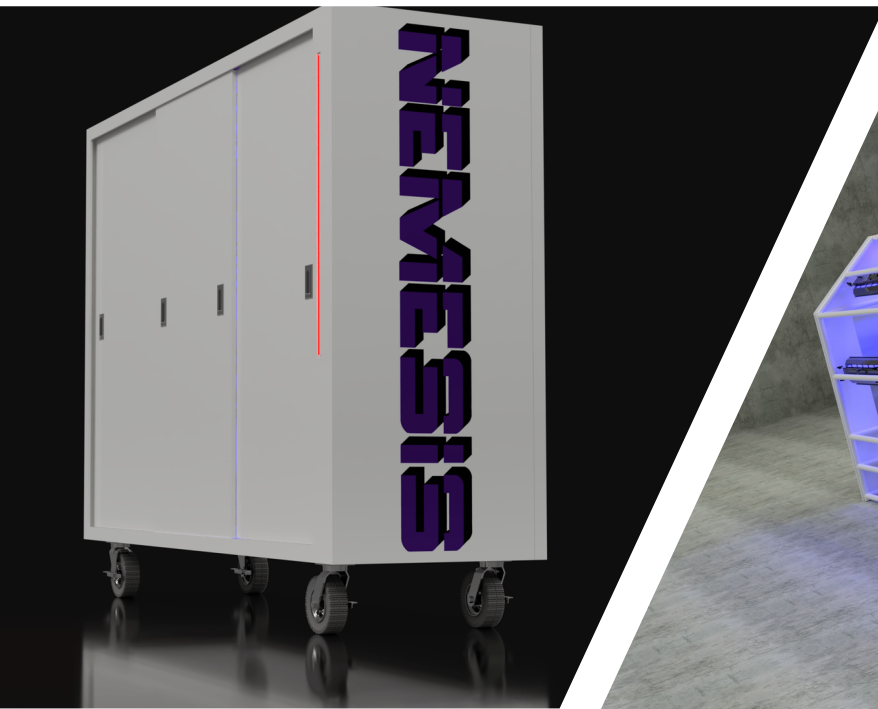
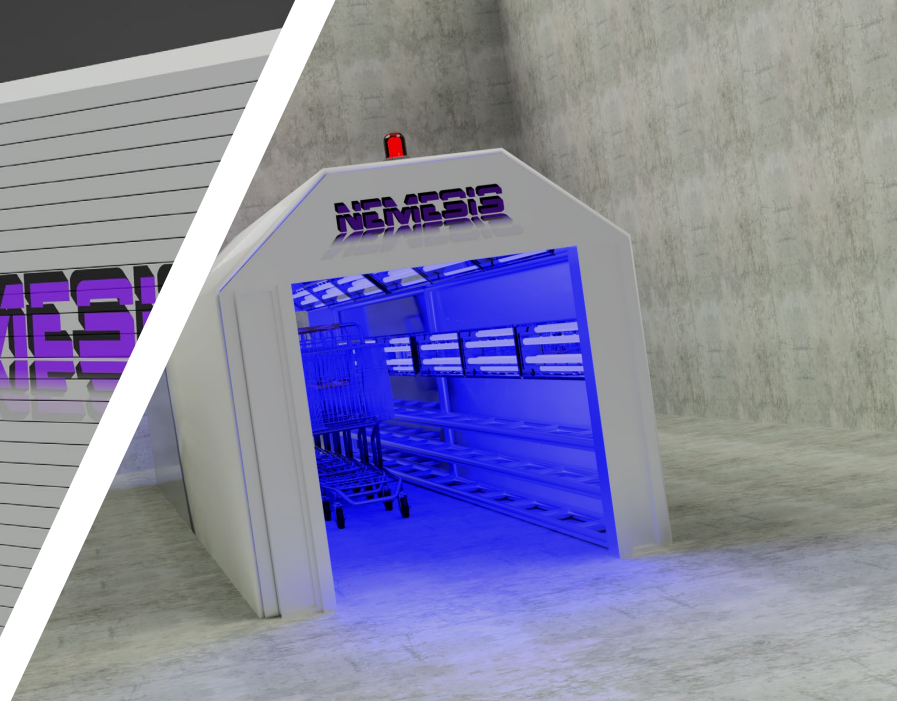
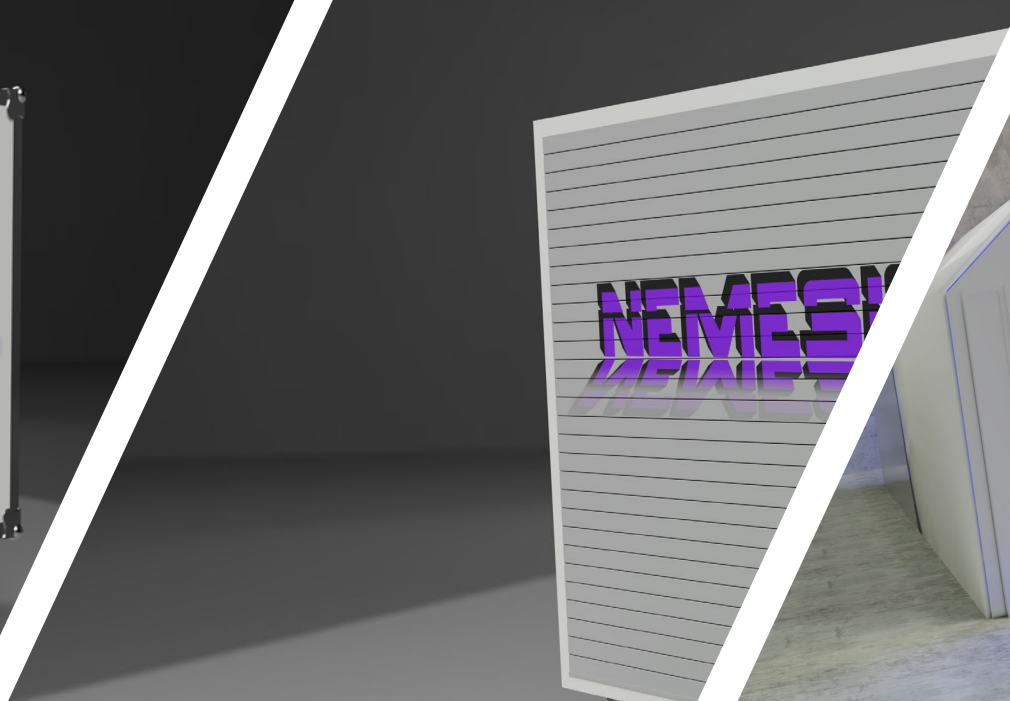
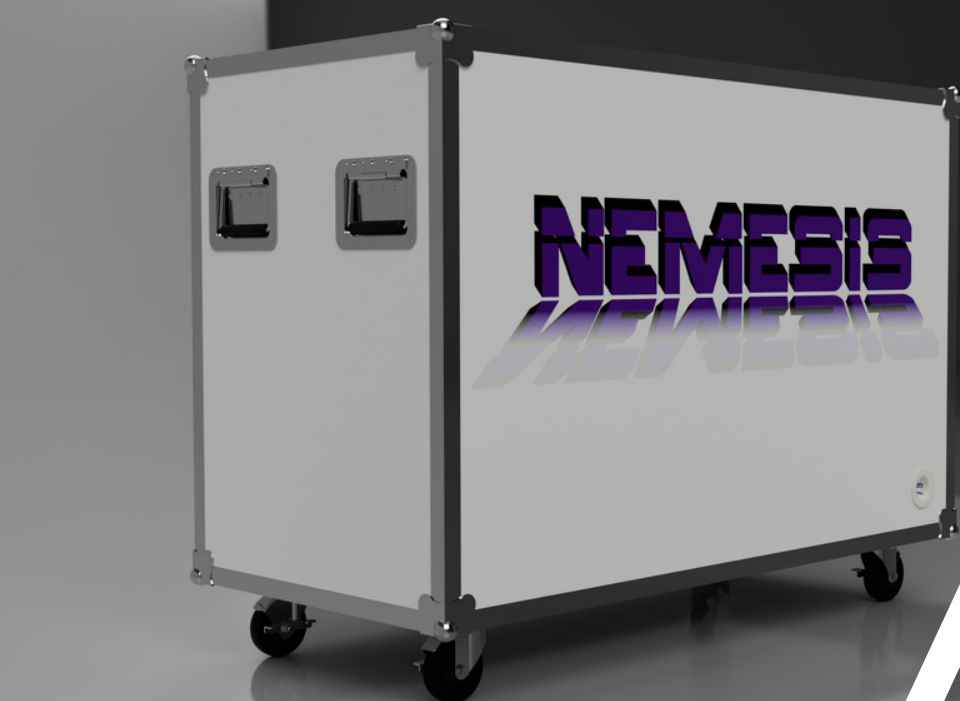
Orochi 36" (UOR36)



Description

A UV-C disinfection chamber for commonly used items such as phones, jewelry, microphones, etc. Provides extremely quick and safe disinfection.





SPECIAL APPLICATIONS



Special Applications

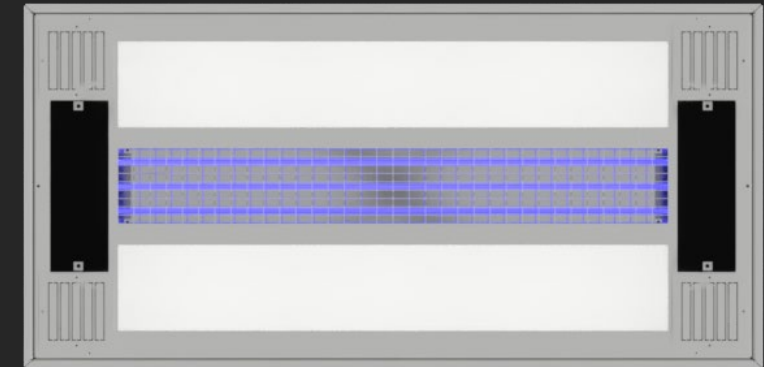
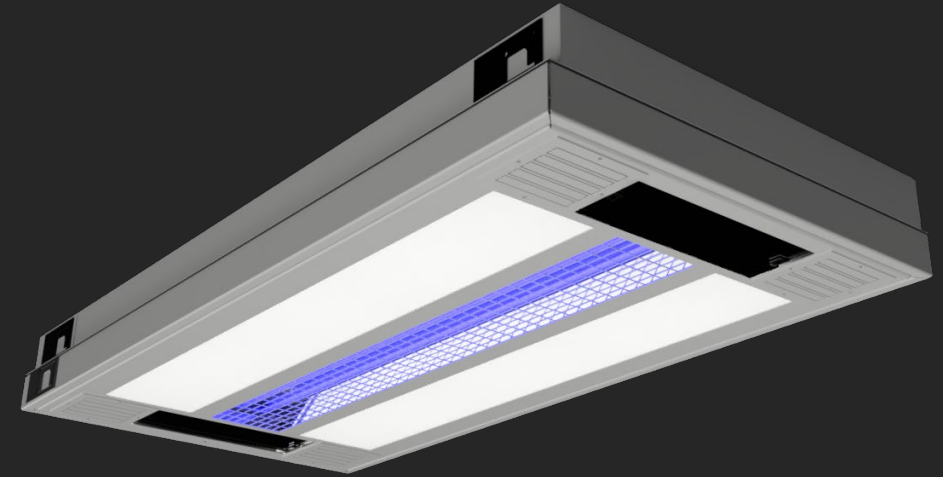
Advantage prides ourselves on our custom application work. We can custom design any of our products, and engineer new products based on any application you need. If we don't have a product that works for your application, let us know, and we will build it.

If you can use a fluorescent lamp in the housing, we can build it UVC ready.

HYDRA DC AIR EXTREME

All in one drop ceiling disinfection solution

- UV-C disinfection, Ambient LED lighting, 24/7 UV-C air filtration in one unit
- Motion sensor for automatic shutoff
- Audible/Visual alarm before/during disinfection
- Timed setting for total, reliable, UV-C disinfection
- Hydra UV-C technology ensures efficacy and efficiency
- 620+ Cubic feet of air per minute (CFM)
- In a 3000 cubic foot space, the air is circulated more than 6 times an hour
- Standard with Wi-Fi and 433mhz RF control
- EMS integration capable
- Available in surface mount



Hydra Air Wiring Application

1. Typical Wiring for the Hydra Air

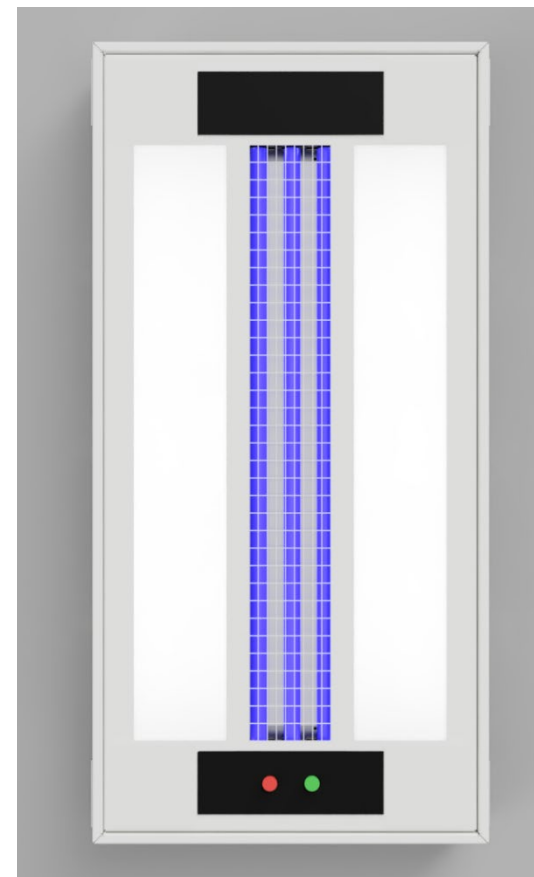
- A. From the existing switch in the wall or the J box in the ceiling, you will bring a hot, neutral, and ground to power the unit.
- B. The hot will wire to the Air/UV-C source to be operated by Wi-fi and/or 433mhz RF control.
- C. The Air/UV-C can be set to operate in many functions:
 - 1. To operate during class hours only.
 - 2. To operate every two hours.
 - 3. Multiple options are available.
- D. There is no UV-C exposure to anyone on the ground for this application.



Hydra Direct and Ambient Wiring Application

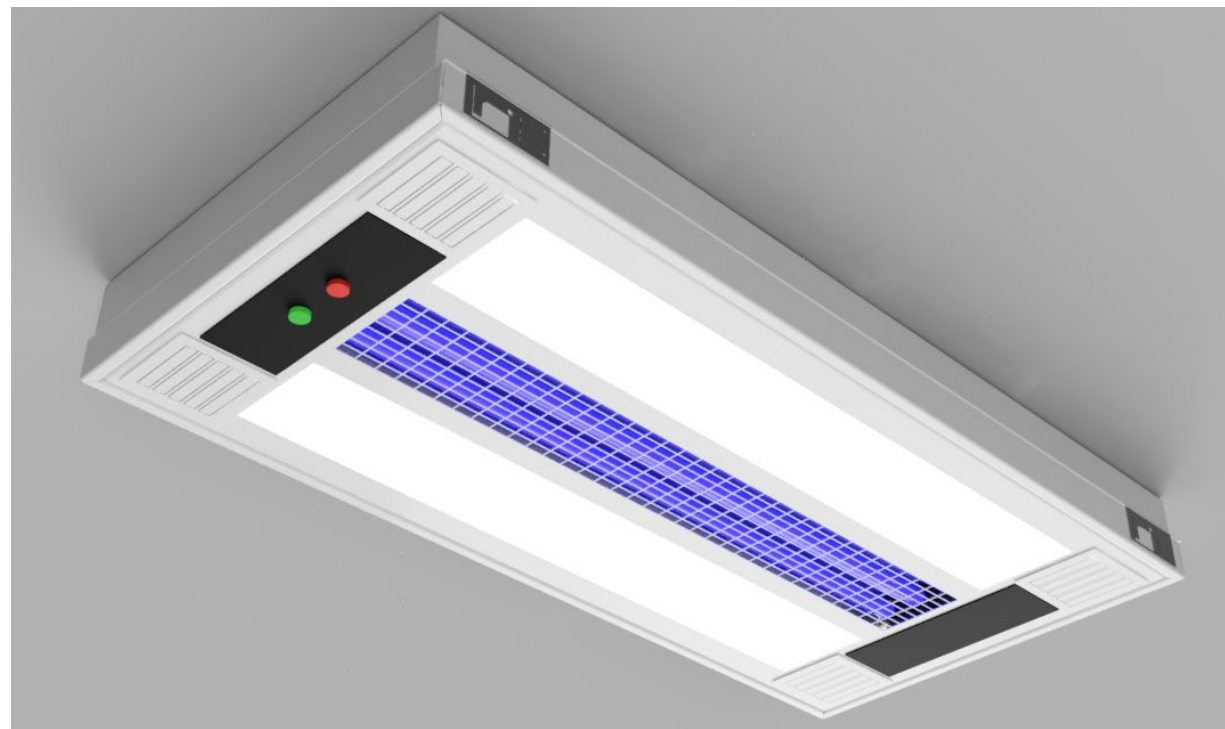
2. Typical Wiring for the UV-C Direct and Ambient

- A. From the existing switch in the wall or the J box in the ceiling, you will bring a hot, neutral, switch leg, and ground to power the unit.
- B. The Switch leg will wire to the ambient light source to operate with the existing lights in the room.
- C. The hot will wire to the direct UV-C source to be operated by Wi-fi and/or 433mhz RF control.
- D. The UV-C light is set to come on when there is no occupancy.
- E. The direct UV-C is controlled with a motion sensor, timer, and buzzer for the hearing impaired.
- F. This function can be set to operate in many ways. The App allows you to set operation to begin at certain times or manually. Once the system is signaled to energize, you will hear an alarm for 15 seconds (or your preferred setting) telling anyone in the room they should vacate. After the preset time and if the motion sensor does not detect occupancy in the room the UV-C light will energize for disinfection. The UV-C light will be programmed to run for a pre-determined time, per the space. If for some reason someone walks into the room, the occupancy sensor will pick up the movement and shut the entire system down. Once the Occupancy sensor senses no movement it will start the process over again from the beginning, to ensure complete disinfection.



Hydra Air Extreme Wiring Application

3. Typical Wiring for **Hydra Extreme**
 - A. Combination of Hydra Air and UVC Direct/Ambient
4. Other configurations available
 - A. Air only
 - B. Direct UVC only
 - C. Air and Ambient only
 - D. Ambient only
- Typical applications for the Hydra includes schools, offices, gyms, restaurants, nursing homes, warehouses, and other commercial settings.



ROI For A Typical School Application

Hydra (UHY) Series

Number of students	1800
Average absences per student per year	4.5
\$ lost @ \$45.00 per student per day	\$ 364,500.00
per month in 8 month year	\$ 45,562.50

Number of classrooms @ 24.5 students per	73
Qty 2 Hydra Extremes and 2 Hydra Direct UV-C	\$ 4,200.00
Total cost for fixtures	\$ 308,571.43
Estimated labor and misc. material (\$1,000.00 per room)	\$ 73,469.39
Total	\$ 382,040.82
ROI	8.38



Chemical Disinfectant ROI

Hydra (UHY) Series

Average cost of Commercial Disinfecting Service per Sq Foot:	0.32
Recommended number of cleanings a month:	4
Yearly cost of chemical disinfection:	\$ 77,800.00

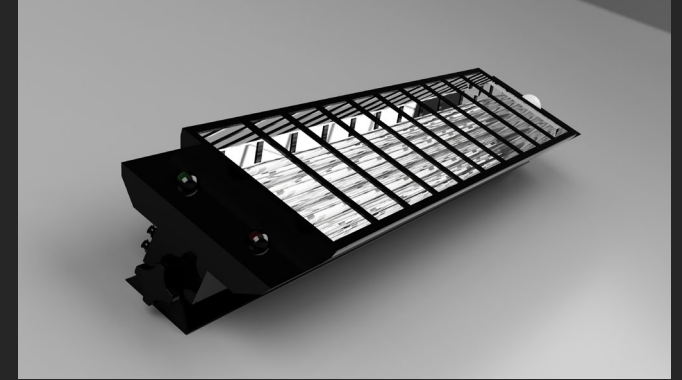
Office Sq Footage:	5,000
Estimated Hydra Cost : 5,000 sqf office building. Each office 100 sqf. For a total of 50 offices. Qty 1 Hydro Extreme in each office. \$1400.00 each.	\$ 70,000.00
Labor and misc. material. \$500.00 per room	\$ 25,000.00
Total	\$ 95,000.00
ROI	1.22

CELANING SERVICES COST PER SQUARE FOOT:	Links To Reference
1	https://www.bloomberg.com/news/articles/2020-03-24/the-sky-high-cost-of-disinfecting-american-businesses
0.25	https://www.ontimesteamcleaning.com/services/disinfecting-and-sterilization/
0.14	https://priceithere.com/priceithere-com/office-cleaning-companies-for-coronavirus/
0.11	https://desertoasiscleaners.com/commercial-cleaning-cost/
0.25	https://www.nationwidecommercialcleaningservices.com/coronavirus-cleaning-fee-schedule/
0.2	https://www.localmemphis.com/article/news/health/coronavirus/should-you-hire-someone-to-clean-to-keep-covid-19-away/522-1861ac11-4a19-47fb-929b-e8d702dd1b94
0.35	https://www.unitedrestorationfl.com/biohazard/coronavirus-cleanup/
0.45	https://www.unitedrestorationfl.com/biohazard/coronavirus-cleanup/
0.75	https://www.unitedrestorationfl.com/biohazard/coronavirus-cleanup/
0.07	https://www.sentralservices.com/blog/commercial-cleaning-service-cost
0.15	https://www.sentralservices.com/blog/commercial-cleaning-service-cost
0.17	https://nycsteamcleaning.com/services/disinfecting/
AVERAGE COST: .32	

NEMESIS TYPHON (UTY)

Universal mount UV-C fixture

- Utilizes 3 55W HO UV-C radiators
- 16 Gauge heavy steel construction for durability
- Universal, adjustable yoke for use with many types of mounting options
- Occupancy sensor to prevent accidental exposure
- ADA compliant audible/visual alerts
- Miro 4 reflector system for maximum efficiency of disinfection
- True1 connection with True1 pass-through
- Ability to link up to 8 units on a 15-amp circuit
- Modular, Quickly attaches to many structures.



UV-C Notes

Notes

- Kills odors
- Take off spread sheet for offices, schools, garages, ect... available for estimating.
- Job pricing available
- Everything is built in Fort Worth, TX

What's Next?

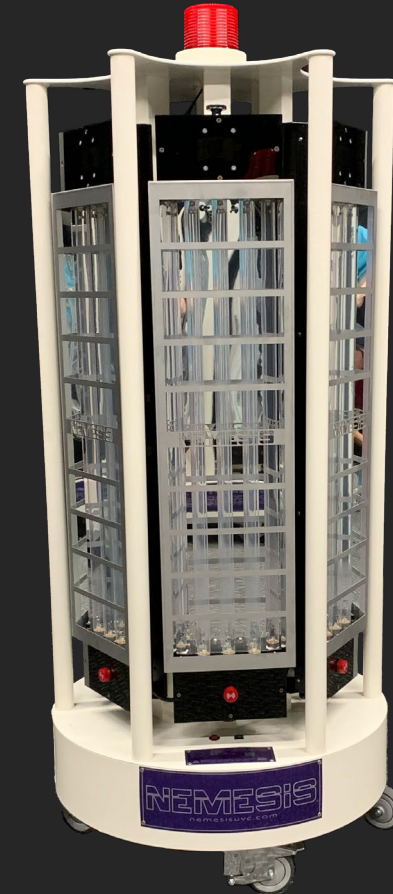
- 222 UV-C coming soon which allows for human exposure and virus inactivation.



NEMESIS TYPHON TOWER

Portable high output disinfection tower

- Heavy gauge aluminum structure, standard powder coat white (other colors available)
- Utilizes the Typhon (UTY) fixture
- Heavy duty vinyl protective cover with handles included
- Portable high output UV-C vertical disinfection tower
- Uses 18 55 W HO radiators
- Standard with Wi-Fi and 433mhz RF control
- Auto-switching power, 90v-277v
- Shock absorbing, sealed precision bearing casters which allows effortless movement.
- Height: 5' 10 ½"
- Width: 2' 5 ½"
- 334 lbs



NEMESIS TYPHON TOWER

Portable high output disinfection tower



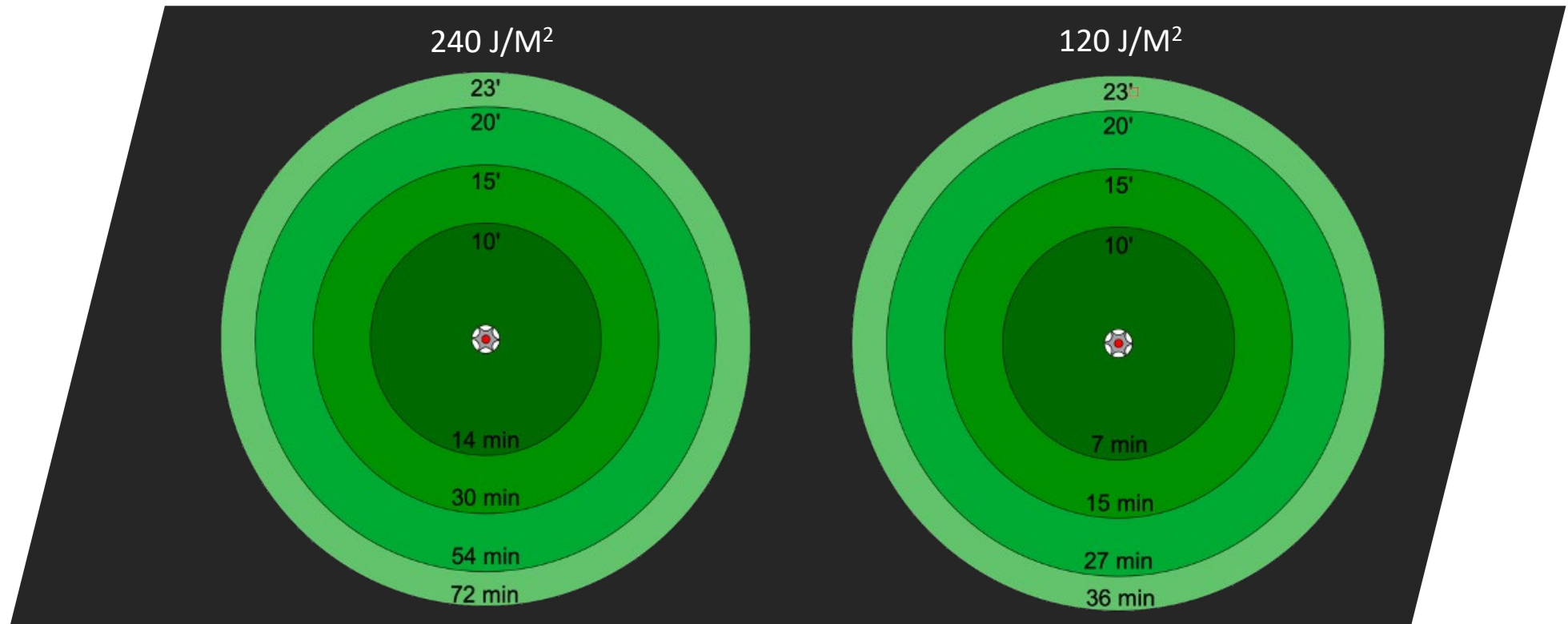
- ATA flight case for maximum protection during travel
- Custom Branding Available
- Tower mounts to case tray

Great For

- Locker Rooms
- Hotels
- Kitchens
- Garages
- Offices
- Cafeterias
- Nursing Homes



NEMESIS TYPHON TOWER



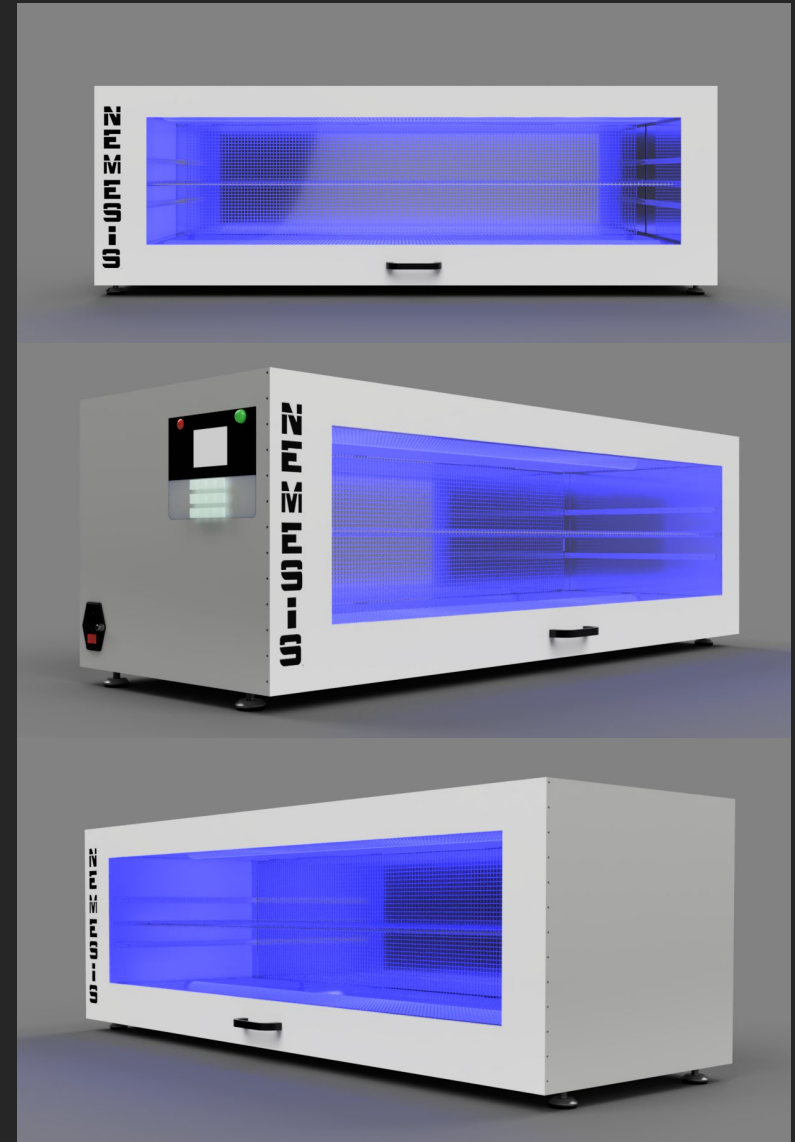
- Unique 360° disinfection solution
- Built in occupancy sensors

- LED warning light safety protocol
- 85db warning alarm safety protocol

NEMESIS OROCHI 36"

36" UV-C Disinfection Chamber

- UV-C disinfection for commonly used everyday items such as phones, jewelry, microphones, radios etc.
- Available in 12", 24", 36" sizes
- High energy use of UV-C for ultra fast (3 min or less) disinfection of equipment of any kind.
- Configurable mesh shelving system to house a variety of items
- Durable, aluminum construction
- Highly reflective interior for maximum disinfection
- Digital control for ease of use
- LED disinfection warning light for safety
- Custom branding options available



UV-C CERBERUS RACK

UV-C disinfection rack

- Available in different sizes to meet the needs of various applications
- Uses 55W HO radiators
- High energy use of UV-C for ultra fast (5 min or less) disinfection of equipment of any kind.
- Removable/configurable specialty shelve and rail system to house many items: basketballs, helmets, surgical masks, packages, etc.
- Highly reflective interior for maximum disinfection
- Keypad control for safety and ease of use
- LED disinfection warning light for safety
- Custom branding options available
- Casters are made of modular rubber for shock absorption and utilize precision bearings for easy maneuverability, safe on turf and basketball courts



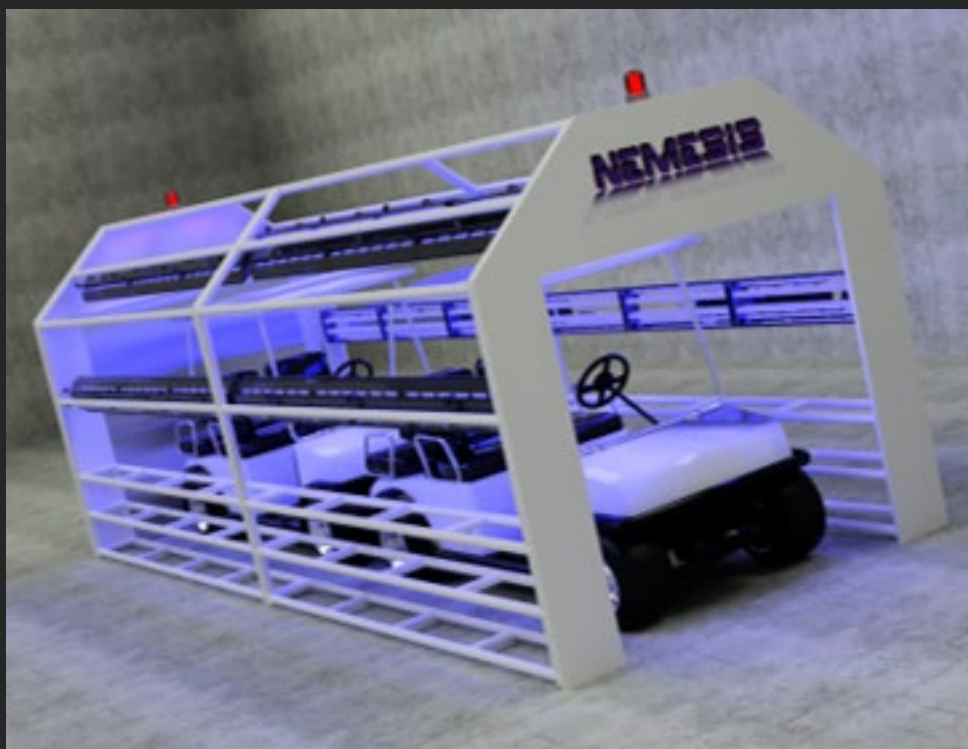
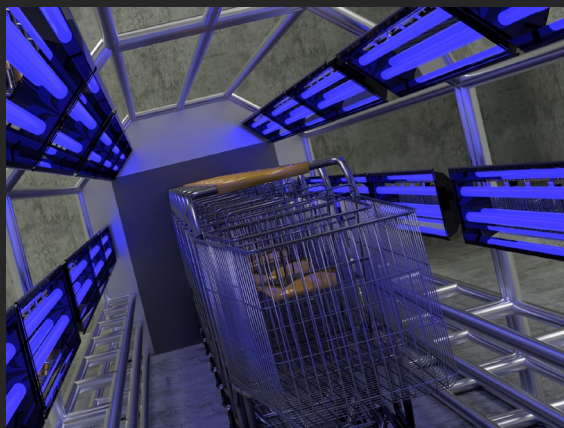
UV-C CERBERUS RACK

UV-C disinfection rack

- “...ESPN provided a UV-C Light sanitizer box called “Nemesis.” Six minutes getting pounded by UV-C light, and equipment virus free. UV-C light is harmful to us, so precautions are in place to avoid direct exposure. This technique will most likely see a lot of applications moving forward.”

- Source: <http://www.tebweb.com/?p=772>





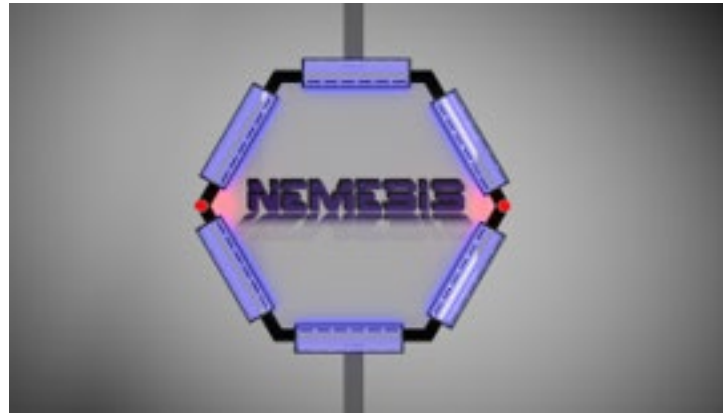
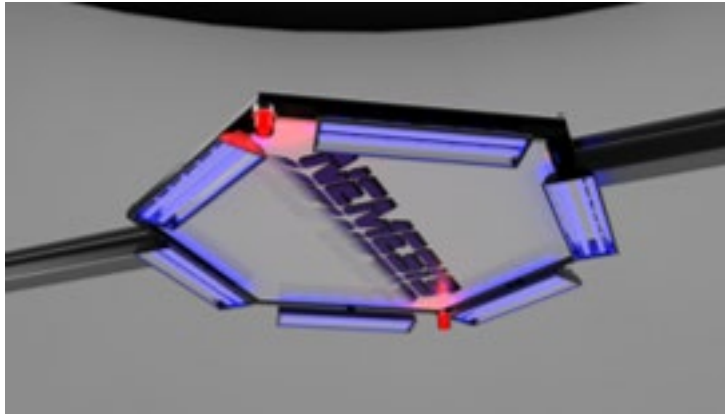
UV-C TYPHON TREK

Utilizing the modular Typhon (UTY) fixture to disinfect large items

- UV-C Disinfection of groups of shopping carts, golf carts, etc.
- Utilizes the modular Typhon fixture
- High Energy use of UV-C for ultra fast (5 min or less) disinfection.
- Automated Front and Rear pass through doors for entry and exit of shopping carts, golf carts, freight, luggage, etc.
- Unique modular system with configurable size to accommodate any number of items



UV-C POD



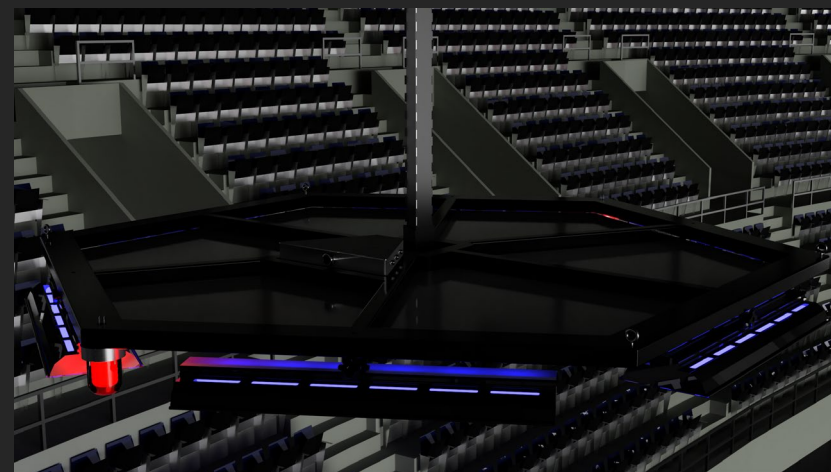
- Utilizes 6 Typhon (UTY) fixtures to disinfect large areas quickly and reliably
- Installed in sports arenas
- DMX controlled from a lighting console.
- ADA compliant audible/visual alerts
- Optional house light addition available
- Custom branding options available



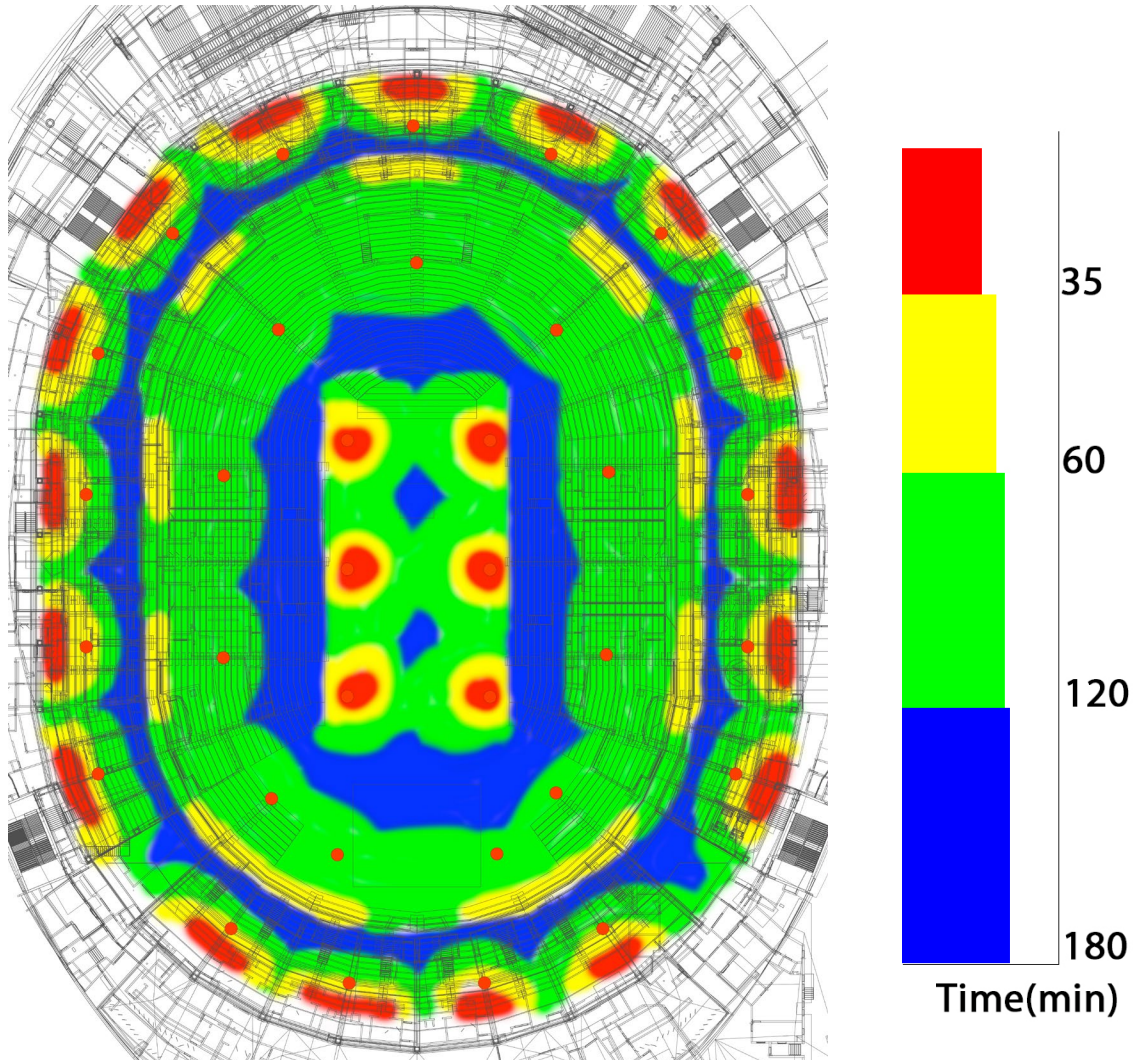
UV-C KINETIC LIFT POD

Moveable kinetic lift attachment

- Movable kinetic lift attachment available in 15' to 100' lengths.
- DMX controlled from a lighting console.
- Movement speeds vary by length of lift.
- ADA compliant audible/visual alerts.
- Custom branding options available.
- Sponsors can have the center branded to offset the cost.



PHOTOMETRIC & THERMAL MAPPING



- Possible to use software such as AGi32, Dialux, and others to create photometric and thermal mapping to calculate necessary amount of fixtures.

Optional STERIONIZER™



Products description

The **STERIONIZER™** is a patented green space air disinfectant technology that creates the outdoor environment indoors.

Produces a **high-density** output of negatively and positively charged ions.

D5 ion output **>10 Billion ions per cc/sec**

D5i ion output **>10 Billion ions per cc/sec**

D6i ion output **>50 Billion ions per cc/sec**

D6 ion output **>100 Billion ions per cc/sec**

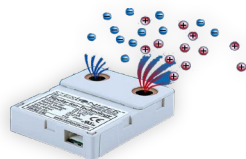
D6Max ion output **≤ 1Trillion ions per cc/sec**

The **STERIONIZER™** system acts as an **“Iron Dome”** against pollutants to neutralize and eliminate the risk of viruses including **SARS-COV-2 (COVID-19)**, bacteria, mold spores, and fungus (3rd party testing).

The **STERIONIZER™** is a **self-cleaning**, ionization system designed to handle up to 10,000 CFM per unit. The unit is designed for multiple mounting options including air ducts and fans.

Best in the market

1 Billion to 1 Trillion ions per cc/sec versus 300-500 Million ions per cc/sec from top competitors.



D5 Series	
Ion output	>1 Billion ions per cc/sec
Ozone	<0.001 ppm
Certifications	UL, CE, cUL, IEC, FCC, CSA
Input Voltage	12 to 240VAC
Airflow	Up to 3000 CFM
Temperature	Temp. +60-60°F
Cleaning	Self-cleaning
Dimensions	L:1.97 W:1.57 H: 0.47



< 0.001 ppm Undetectable ozone production.

Optional STERIONIZER™



Benefits & Advantages



24/7 Self-Cleaning
System (No
maintenance)



Creates high density
of Ions. 1-100 billion
ions per second. Up
to 30,000 positive
and 30,000 negative
ions per cm³.



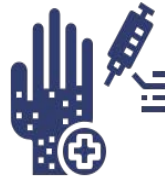
Zero,
undetectable,
Ozone - <0.001



Neutralizes and
Eliminates VOC's



Neutralizes and
Eliminates Odor



Neutralizes and
Eliminates Allergies



Neutralizes and
Eliminates
Viruses, Bacteria,
Mold Spores,
Fungi, Dander



Discharges static
electricity and
prevents
electrostatic build-up



Health benefits
confirmed by leading
international
research institutions



Extends shelf life of
produce



Fully tested and
certified



Passed all safety
evaluation testing
No skin irritancy
No eye irritancy
No genotoxicity



Increases HVAC
efficiency by up to
30%



Easy and fast
installation



Universal voltage



Safe and
environmentally
friendly

Proven Technology

Substance	Substance Name	Testing Organization	Removal
Bacteria	Escherichia Coli	EMSL Analytical, USA	99%
	Escherichia Coli ATCC	Istanbul University, Turkey	91%
	Staphylococcus Aureus	EMSL Analytical, USA	91%
	Pseudomonas Aeruginaosa	Istanbul University, Turkey	99%
	Staphylococcus Aureus (MRSA)	EMSL Analytical, USA	99%
Fungus	Aspergillus Niger	EMSL Analytical, USA	97%
	Dichobotrys Abundans	Prof. Joe F. Boatman, USA	90%
	Penicillium	Prof. Joe F. Boatman, USA	95%
Mold	Cladosporium Caldosporioides	EMSL Analytical	97%
Spores	Bacillus Subtilis Var Niger	Istanbul University, Turkey	89%
Viruses	Influenza H1N1	Kitasoto Research Center, Japan	99%
	Influenza H5N1	Kitasoto University, Thailand	99%
	COVID-19	University of Patras, Greece	99.9%

