

[OEDSA-100]

COVID-19 Disinfection System Based on Ultraviolet Pulsed Fiber Laser (for airborne pollutants)

Features:

- For disinfection of all kinds of airborne viruses, bacteria, germs, including coronaviruses (COVID-19)
- For general purification of indoor air
- Unique design using high-power pulse fiber laser beam
- Fast and highly efficient action
- Continuous scanning of the designated air volume for optimal results
- Automated operation with user software
- Turn-key solution
- Easy to use, maintenance-free, cost effective
- Non-toxic, chemical-free, eco-friendly

Applications:

- Regular disinfection and purification of air
- Installation in existing ventilation systems where air is circulating
- For purification of the air in specific rooms and enclosed spaces
- In hospital, schools, factories, retail stores, restaurant, hotel, office and transportation like bus, train, etc.
- Where constant and/or regular disinfection is required

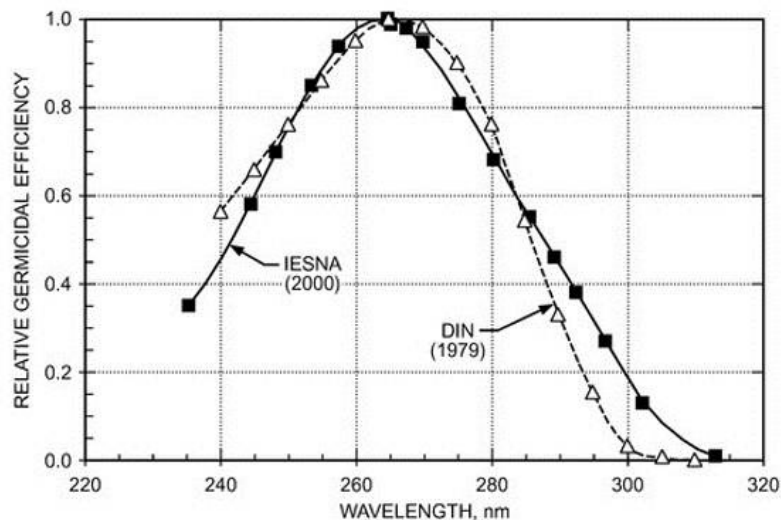
Product description:

The new COVID-19 Disinfection System from O/E Land Inc. is designed to reduce indoor pollutants, both airborne and on surfaces, by inactivating pathogens and microorganisms like mold, bacteria, and viruses, with the help of short-wave high-power ultraviolet light (UV-C light).

Our COVID-19 Disinfection System uses a high-power pulsed fiber laser, working at 265 nm (UV-C light). Its high peak power beam can kill various microorganisms, such as bacteria, viruses (including coronavirus), and protozoa in few seconds compared in 10's minutes with a regular UV-C lamp. UV-C pulse laser beam can destroy their DNA shell like a bullet, causing them to lose their ability to reproduce and therefore die, achieving the effect of disinfection and sterilization.

According to the National Health Commission and the Centers for Disease Control and Prevention (CDC), most of the viruses are sensitive to light and heat. Therefore, a combination of a traditional alcohol-based cleaning material and a UV-C light purification system can offer maximum protection and disinfection.

Some previous studies already have showed that the peak of germicidal effectiveness occurs at light wavelength of 265 nm, so our Disinfection System is proven to have maximum efficiency. This, combined with more than 1000 times higher peak power than UV-C lamp and a small powerful laser beam size, provide a fast and highly efficient solution for purification and disinfection purposes.



2019 ASHRAE Handbook—HVAC Applications, Ch. 62, Fig. 3

Our own study, conducted in a certified laboratory in July 2022, shows that in a high-level of bacterial contamination, which is not likely to occur in normal indoor environment, our system is able to achieve 98% bacterial reduction after an exposure of only 120 seconds. And since, the bacteria are more resistant (5 – 10 times) than the viruses in terms of decontamination, we can expect that the effect of the system on viruses, including coronavirus, will be at least same, or even better. A new study, ordered by our company, will be soon underway to confirm the effectiveness on viruses like MS2 phage, a surrogate to coronavirus.

Another important conclusion of the study is that our high-power pulsed fiber laser beam system does not appear to damage surfaces, like synthetic materials, fabrics, cardboard, or skin, for the time they are being exposed.

The COVID-19 Disinfection System consists of a fiber laser module, and a scanner. The laser module is a high-power picosecond UV fiber laser, which has high energy efficiency. It is responsible for delivering the laser beam with the necessary power and wavelength. The scanner is mounted in the existing air duct in such way, so it can guide the laser beam, and scans the whole volume of the designated space.

Compared to the regular UVC LED lamps, our ultra-fast laser has thousands to millions of times higher peak power, and thus it can kill the viruses and bacteria in a matter of minutes. This system is modular, and it can be installed directly into pre-existing residential or commercial ventilation/air exchanger and air conditioning units. As the air is flowing through the ducts, it also passes through our system module. The whole volume of the air duct is continuously scanned by the power laser beam, which is enough to disinfect the air by means of germicidal irradiation in matter of minutes. As the air flows through the duct with relatively low speed, our system with a fast-acting beam can easily inactivate most of the airborne microorganisms.

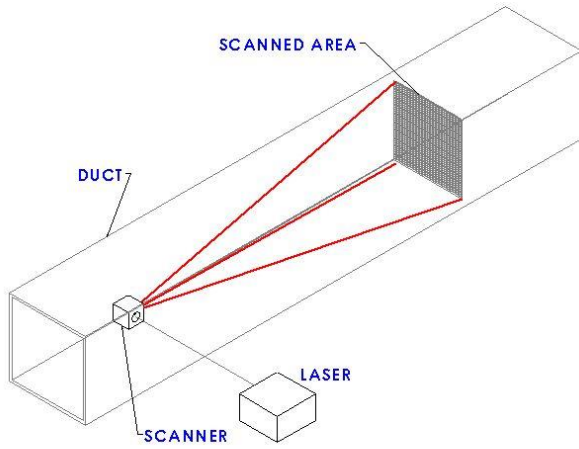
The Disinfection System can be controlled either manually, or with the provided software. Both options have timed operation of the laser, but the software also allows fully automated operation, including some ON/OFF and time-duration scheduling for even further convenience for the user.

Product specifications:

Parameter	Unit	Value
Wavelength Range	nm	265
Output power	mW	500
Laser module, LxWxH	cm	60x50x40
Scanning volume (ventilation/air exchanger installation) *	m	Full volume of air duct
Power supply	-	AC 110-240V/50-60Hz
Timed operation	-	Yes (manual)
Automated operation (ON/OFF; timer; schedule)	-	Yes (software)
Operating temperature	°C	5 - 45

* Scanning volume depends on the air duct size.

Installation options:



Inside ventilation ducts for safety:
for air borne virus and bacteria purification

UV Pulse Fiber Laser Module