

NEELBHASMI



A UVC light-based room sterilization system designed by Raja Ramanna Centre for Advanced Technology, Indore, a unit of Department of Atomic Energy, Govt. of India and Manufactured by M/s Research India

Typical Exposure time requirements:

The following table provides the required time of UV-C exposure for inactivating SARS-CoV-2.

Sr. No.	Distance of the surface from the lamp (cm)	Required exposure time	#Area effectively covered in horizontal surface by a horizontal lamp will be more than 15 square meters.
1	30	30 s	
2	50	55 s	
3	100	4.5 min	
4	120	6.5 min	
5	150	10 min	
6	200	20 min #	

The "NEELBHASMI" is an Ultraviolet-C (UVC) light based mobile system intended for inactivate various micro-organisms including corona viruses the air as well as the surfaces of various objects inside a room at research centres, hospitals, doctors' offices, or any other places of work. It is equipped with eight lamps which emit UVC radiation that kills bacteria and viruses by destroying the molecular bonds that hold their DNA (or RNA) together. The system has a height-adjustable central vertical tower whose top end is attached with four detachable arms, each fitted with two UVC lamps, one facing up and the other facing down. Each of the arms can be moved at any angle between 30 and 145 degree with respect to the vertical tower thereby allowing the user to maximally illuminate surfaces of any orientation for efficient sterilization. The height adjustability of the vertical tower further allows the user to place the lamp from the target surface as close a distance as possible so as to be able to sterilize it in a minimum time. The bottom end of the vertical tower is mounted on a solid metallic base having nylon wheels that provide the system the desired mobility to move across the room. The UVC lamps of the system can be remotely switched on and off from outside the room (where it is to be used) so as to cause no exposure of UVC radiation to the operator. The timer provided with the system allows one to set the time duration over which the lamps are required to remain switched on for the purpose of sterilization. The motion sensor of the system will immediately switch off the lamps in case any inadvertent movement by any person inside the room takes place when the system is in use. The system is capable of sterilizing surfaces kept within one-meter distance from the tower in less than 5 mins. For sterilizing a room with a floor area of 10 square meter it will take around 45 minutes.

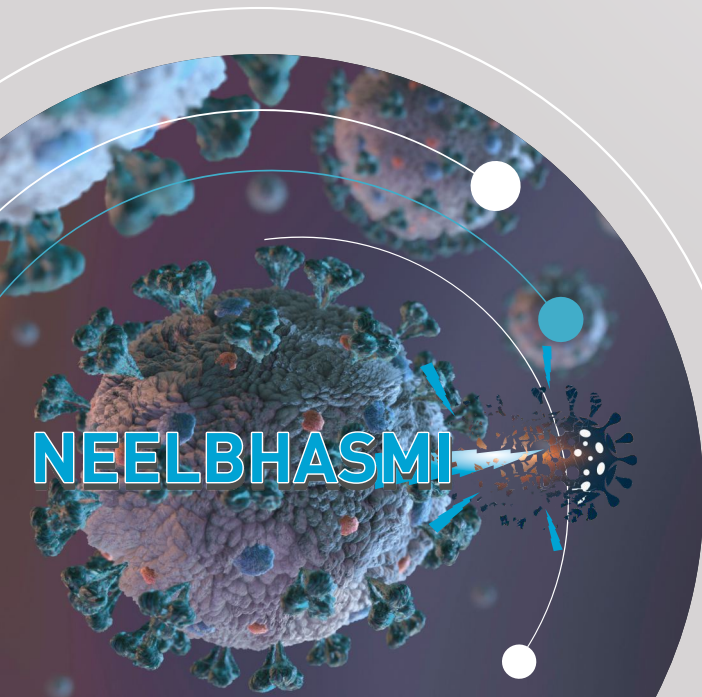
Special features of NeelBhasmi:

- Easy to adjust arms for effective utilization for horizontal, vertical and inclined surfaces.
- Very effective for typical office and laboratory spaces, where areas to be sanitized are combination of horizontal (table tops, floors) and vertical (filing cabinets, doors) surfaces.
- Remote on off control for UVC lamps on individual arm.
- Motion sensor for safe operation.
- Detail guidelines provided for effective utilization of NeelBhasmi.
- Based on UV-C at 254 nm and ozone is not generated.

Typical Exposure time requirements:

The exposure times have been calculated considering one UVC lamp (13 W UVC output) in operation and assuming the required irradiation dose (for inactivating SARS CoV-2) ~1.5 times higher than the mean dose reported* for inactivating various other coronaviruses known as on date.

(*Fluence (UV Dose) Required to Achieve Incremental Log Inactivation of Bacteria, Protozoa, Viruses and Algae Revised, updated and expanded by Adel Haji Malayeri¹, MadjidMohseni, Bill Cairns² and James R. Bolton)



Disclaimer: The efficacy of NeelBhasmi in inactivating SARS-Cov-2 (the virus responsible for COVID-19) with the use of UV-C radiation is not yet established. In fact, there is no published report worldwide, as on date, on quantitative dose requirement of UV-C to deactivate SARS-CoV-2. However, efficacy of UV-C light in causing high level of inactivation (~99.9%) of other coronaviruses including two of the near-relatives of SARS-CoV-2, namely, MERSCoV and SARS-CoV-1 is well established. It is pertinent to mention here that the International Ultraviolet Association (IUVA) also conforms to this view and advocates the use of UV-C for inactivating SARS-CoV-2#.



SPECIFICATIONS

Number of Lamps	8
Power Consumption:	240w
UV-C Output at 100 hr: (Watts/Lamp)	104w
Irradiance (W/cm ² @1 meter)	928
Average Effective Life: (Hours)	9000
Wavelength	253.7nm
Remote Control	RF REMOTE
Channel	4
Connectivity	<10m
Number of arms	4
Arm Length	960 mm
Arm Rotation	360 degree
Switch*	4
Illumination angle	0 - 145 degree
Adjustable Height (mm)	1220 - 2000
Height Adjustment Mechanism	Rack & Pinion
Portable	Yes
No of Wheel	4
Lockable Wheels	2
Sterilizing Timer	Programmable
Safety Sensor	IR (180) degree
Detection Range	10m



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