

# Nilfisk Liberty SC50 UVGI – FAQ



## 1. Why does floor disinfection matter?

According to the WHO, SARS-CoV-2 behaves similarly to other coronaviruses, meaning that it may persist on surfaces for durations ranging from several hours to several days. The duration may vary according to different conditions (e.g. surface type, temperature, or environmental humidity).

In addition, a [new report](#) from the US Center for Disease Control (CDC) cites shoe soles as potential transmitter for the spread of SARS-CoV-2. "...As medical staff walk around the ward, the virus can be tracked all over the floor, as indicated by the 100% rate of positivity from the floor in the pharmacy, where there were no patients. Furthermore, half of the samples from the soles of the ICU medical staff shoes tested positive. Therefore, the soles of medical staff shoes might function as carriers."

## 2. For which applications is the Liberty SC50 UVGI an ideal solution?

High-traffic areas, including:

- Hospitals
- Retail
- Airports
- Schools
- Shopping centers
- Public buildings
- Train/subway stations
- Religious centers

## 3. Is UV-C exposure an effective method for disinfection?

Backed by decades of supporting studies, UV-C technology is widely used to fight pathogens. UV-C light is germicidal, meaning it damages the DNA of bacteria, viruses, and other pathogens, thereby preventing them from multiplying and causing diseases.

Articles:

<https://sites.nationalacademies.org/BasedOnScience/covid-19/does-ultraviolet-light-kill-the-coronavirus/index.htm>

## 4. Is the Nilfisk Liberty SC50 UVGI an effective disinfection solution?

We believe so. Scrubbing a surface to eliminate dirt and debris is the first step to rendering floors germ-free – and it is both important and necessary. However, while scrubbing can reduce germ prevalence on a given surface, it cannot provide total disinfection.

To render a surface entirely germ-free, a disinfection process must be completed after scrubbing. UV-C is a well-proven disinfection technology. By applying UV-C light to a properly cleaned surface, the technology can deactivate pathogen DNA and leave the surface fully disinfected.

By combining the effective floorcare capabilities of the Liberty SC50 with the germicidal effect of UV-C exposure, Nilfisk aims to deliver disinfection capability through an efficient, high-performance floorcare solution.

## 5. How has the solution been designed?

Nilfisk's technology partner, Carnegie Robotics, designed a specialized UV-C attachment to provide high-efficiency, thermally stable, long-life disinfection capability. With an operating frequency of 254 nm, the UV solution has been carefully engineered to provide the necessary disinfection-power levels at the highest battery efficiency.

The power levels provided by the UVGI are based on studies<sup>1</sup> demonstrating the effectiveness of UV-C as a disinfectant against various pathogens.

Currently, limited research exists concerning the elimination of SARS-CoV-2 from different floor surfaces. However, a [recent laboratory study](#) (pre-print) conducted by the University of Milan analyzed the effectiveness of UV-C (254 nm) on SARS-CoV-2 samples. Viral densities ranged from those expected in closed environments (e.g. hospital rooms), to higher

<sup>1</sup> STUDY USED: <https://www.medrxiv.org/content/10.1101/2020.06.05.20123463v1.full.pdf>

concentrations observed in terminal COVID-19 patients. The research showed that a UV-C dose of 3.7 mJ/cm<sup>2</sup> was enough to achieve 3-log inactivation of pathogens at low- to mid-level viral density; complete inhibition of even the highest viral concentrations was observed after exposure to UV-C light emitted at an intensity of 16.9 mJ/cm<sup>2</sup>.

The Nilfisk Liberty SC50 UVGI has a designed operating UV-C intensity of at least 3.9mJ/cm<sup>2</sup> at top speed, and up to 9.8mJ/cm<sup>2</sup> at minimum speed. As such, we believe that the Liberty SC50 UVGI is an effective tool for disinfecting surfaces.

#### **6. How does the Nilfisk Liberty SC50 UVGI work?**

The UV attachment is located at the rear of the machine, directly behind the SC50's scrubber. UV-C light is emitted directly at the floor, in close proximity and at a dosage level that can adequately target coronavirus and other pathogens.



#### **7. Is it safe? How is the Liberty SC50 UVGI attached?**

- The UV-C fixture is compliant with all applicable safety standards.
  - Entire UVGI solution located under machine, and protected by Liberty SC50 chassis.
  - UV-C light emission confined to immediate floor area by redundant skirting.
  - Emitters monitored in closed-loop fashion to ensure proper function and UV-C dosage.
  - Emitters encased in protective film to prevent spread of glass or other contents in case of emitter damage.

#### **8. What does an operator need to be careful about when using this technology?**

No special precautions are required while using this new technology; the UVGI is fully enclosed and secured under the machine. Removal of the device automatically cuts power to the machine, and the machine body protects the device from accidental damage.

In addition, the UVGI has built-in safety features that prevent accidental UV-light exposure during both manual and autonomous operation.

The following preventive-maintenance actions must be performed by the operator:

- Daily inspection to ensure covers are intact and undamaged
- Daily confirmation of bulb functionality via status panel located on the front of the unit
- Monthly inspection of wiring/mechanical interface to check for damage or excessive wear

#### **9. Can this device be retrofitted onto an SC50 that was purchased previously?**

Yes. Contact your dealer or sales representative for consultation and arrangement of service; a Nilfisk service technician must install the UVGI device and update the SC50's programming. An addendum to the service or sales contract will be provided to cover the UVGI device, as well. There will be an additional installation cost for retrofitting in the field by a trained, authorized service technician.

#### **10. Does the UV-C light impact the SC50's run-time?**

Yes. If operated full-time, the UVGI will reduce the SC50's 5-6 hour operating time by approximately 25%. The UVGI solution can, of course, be activated and deactivated as necessary, and the default run-time should be enough to ensure completion of cleaning jobs in most applications.

#### **11. Can the UVGI device be serviced?**

Yes. The UVGI device has been designed for a long lifecycle, with high-efficiency UV emitters and solid-state components. The system monitors lamp life; should the effectiveness of the lamps be reduced, it will indicate to the operator that the UVGI requires service. Common service parts are listed in the device documentation, and are available for purchase.