Robotic UV-C Area Sterilization Details

Does UV-C kill the Covid-19 virus?

Ultra Violet C disinfection is a well proven method of disinfecting areas and spaces. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6801766/) While it has not been proven to eliminate the Covid-19 virus it is believed, based on its ability to kill other Crona viruses, that it is effective on Covid-19 (http://www.iuva.org/IUVA-Fact-Sheet-on-UV-Disinfection-for-COVID-19)

Is UV-C safe for human exposure?

Exposure to UV-C is definitely dangerous for humans and should not be allowed. (https://www.who.int/uv/faq/whatisuv/en/index2.html) All UV-C emitting devices must ensure that no humans are in range. While there has been some research into UV-C wavelengths that are not dangerous for human exposure, this concept is still unproven and all UV-C devices should be considered unwise for human exposure. Any UV-C device must ensure human safety; either through appropriate hardware or through well established and enforced firm protocols.

How does the Newton Programmable Sterilization Robot protect from human exposure?

The Newton robot is equipped with both machine vision and stereo machine vision to detect human exposure. The stereo machine vision utilized for human detection was developed, patented and has been effectively deployed for over 15 years by Newton Robotics sister company: Newton Security (http://www.newtonsecurityinc.com). The standard machine vision used for additional human detection, for collision avoidance, for stair measurement and to detect any changes in the trained environment was developed and deployed by another sister company to Newton Robotics: Newton Labs (https://www.newtonlabs.com)

What strength of UV-C is necessary to kill viruses?

Considerable scientific study has resulted in generally accepted formulas for the disinfection of spaces. UV-C at 232nm is considered the optimal wavelength for virus destruction. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3292282/). The formula is: UV dose $\mu Ws/cm^2$ = UV intensity $\mu W/cm^2$ × exposure time (seconds). UV intensity is inversely proportional to the square of the distance so it dramatically decreases at longer distances. The delivered energy on an area is a squared function; in other words distance is dramatically salient for the killing time of a virus. A high energy head such as used on Newton's Programmable Sterilization Robot placed at 15 to 30 CM (6 to 12 inches) from the area delivers approximately 1000 times the killing power on an area of a 'bulb' style cart or robot in the center of a room. Thus a high power manipulated head can move at significantly increased speed to any other type of UV-C device. Newton has designed the programmable head so that it can move at approximately 1 inch per second and effectively kill the Covid-19 virus.

What Time is required to Disinfect a Room.

At the approximately 1 inch per second speed of the programmable head it requires in the 30 minute to 1 hour range to fully disinfect a room. This disinfection time varies widely by a number of factors such as the area to be affected, size of the room etc.

What is the Battery Life of the Newton Robot?

The Newton Programmable Sterilization Robot can operate at full power for approximately 3 to 4 hours on a single charge and then return to its charging station for re-charge. Recharge requires approximately 30 minutes. When the robot is tether equipped operational life is unlimited.

What is the training time for a room?

A fully trained and protected technician should require approximately the same time to train as to disinfect the same room. Training is a onetime only process; subsequently the robot can repeat the disinfection

Using a Programmable Area Sterilization Robot
A Robot that Memorizes an Area and then Infinitely Repeats

Disinfects Better than a Human Cleaning Crew

The Newton Programmable Area Sterilization Robot utilizes UVC to kill viruses and germs in an area. The robot is trained once for an office, control room or virtually any other area and then can return without human supervision to repeatedly disinfect that area. The advantage of the Newton Programmable Area Sterilization Robot is that it's equipped with a 7 Degrees of Freedom arm that can reach and sterilize areas that are not reachable with other UVC methods. It does not require a human crew to follow to complete the sterilization. With its Stair Climbing Capability it can disinfect virtually any area.

Effective
When properly programmed, The Newton Programmable Sterilizing Robot can achieve 6-log reduction or 99.9999% disinfection of a room or area. Superior to a human cleaning crew.

Programmable-Memorizes the Area
The Newton Programmable Area Sterilization Robot is trained once for a room or area memorizes that area and can then disinfect that room or area an unlimited amount of times without human supervision or accompaniment.

Battery Operated
The Newton Programmable Area Sterilization Robot can be provided either with a cable tether or fully autonomous with battery power; whichever is most efficient in the application.

Advanced Machine Vision
For collision avoidance, stair calculation and to ensure there are no humans in the area; ensures safety