



Integrated Germicidal UV-C (GUV) Air Cleaners

Technology Overview

Germicidal UV-C (GUV) technologies deactivate the DNA of bacteria, viruses, molds, fungi, and pathogens and can be used to meet updated guidelines and ventilation requirements for airborne pathogen control. Integrated GUV air cleaners use UV-C light from low-pressure mercury lamps to sterilize air, reducing the spread of airborne pathogens and disease transmission. The air cleaners integrate into existing lighting infrastructure, with the option to also provide LED lighting. Integrated GUV air cleaners can be retrofitted into existing buildings without the need for extensive modifications, like electrical upgrades or additional airflow.

Integrated GUV air cleaners are designed for safety and efficacy. A multi-pass airflow chamber is a maze-like structure around the lamp that ensures adequate airflow of an appropriate intensity to effectively deactivate harmful particles. The airflow chamber also protects against UV-C light exposure, making the air cleaners safe for use in occupied spaces.

As higher-rated filters are added to an HVAC system, a pressure drop can occur, burdening the system and reducing efficiency. GUV air cleaners offer the same or better disinfection while improving HVAC operations by providing equivalent air changes per hour (eACH) to reduce energy and save costs. Integrated GUV air cleaners are quieter than HEPA-style air filter systems, with lower costs, reduced waste, and less maintenance required.

Why is GSA Interested?

The CDC recommends five air changes per hour to prevent the spread of viruses.¹ The vendor estimates that integrated GUV air cleaners can provide four or more eACH and reduce HVAC runtime by 50–70%.

Integrated GUV air cleaners are safe for use in occupied spaces and pose the same disposal hazards as standard fluorescent bulbs. The lamps are rated for 9,000 hours and include a lamp-life monitor that notifies building operators when 10% of life remains.

Deployment Potential

Integrated GUV air cleaners can be deployed in any building. They may be especially beneficial in buildings with dated or ineffective HVAC systems, potentially reducing the need for major renovations.

The air cleaners can be wired to lighting fixtures to run whenever the lights are turned on or they can be wired separately to run continuously. They are designed for use with 7–10 ft ceiling heights with one unit required per 600 ft².

¹ Taking Steps for Cleaner Air for Respiratory Virus Prevention. <https://www.cdc.gov/respiratory-viruses/prevention/air-quality.html#:~:text=Aim%20for%205%20or%20more,ACH%20to%20your%20existing%20ventilation.>

Green Proving Ground (GPG), in collaboration with the U.S. Department of Energy, is evaluating the real-world performance of integrated GUV air cleaners in federally owned buildings within GSAs inventory. The technology will be provided by Louvers International, and coordinated with other ongoing evaluations.