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New Light Disinfection Technology

Using High-Intensity Narrow-Wavelength Light Sources

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Technology Overview

This invention is a new light disinfection technology based on asynchronous, intermittent lighting that uses high-intensity, narrow-wavelength light sources for rapid microbial disinfection. This highly efficient bactericidal system with LED light sources is controlled by a circuit with a programmed microcontroller and a monitor to adjust the exposure time, frequency, duty cycle and lighting pattern. With the optimum combination of light source and light exposure program, microorganisms can be rapidly inactivated by targeting multiple cellular sites along various inactivation pathways. The technology is not only safe and effective against a wide spectrum of microorganisms, including drug-resistant infectious microbes, it also prevents the development of resistance in the microorganism.

Marketing Opportunity

Contact with a microbial-contaminated surface is the most common transmission route of infectious diseases. There are various concerns associated with conventional disinfection methods, such as material compatibility, the emergence of microbial tolerance and resistance, and the persistence of potential harmful residues. This new light disinfection technology combines multiple adjustable light sources powered by low-voltage batteries and aims to achieve rapid surface disinfection and decrease the likelihood of emergence of tolerance and resistance traits in the microorganisms. In addition, compared with synchronous light, intermittent light exposure can cause a significant decrease in the inflammatory reaction of the human epidermis, which provides a safe method for hard surface disinfection. The device can be used for mobile, automatic or on-site surface disinfection of many items used in laboratory facilities, public infrastructure and households, including biological safety cabinets, medical instruments, handrails, touch panels, bathroom items and toys.

Highlights of the Technology

- Rapid inactivation of microorganisms
- Effective against a wide spectrum of microorganisms
- Energy saving
- Asynchronous intermittent lighting
- Safe for humans and animals
- Compact design for diverse application