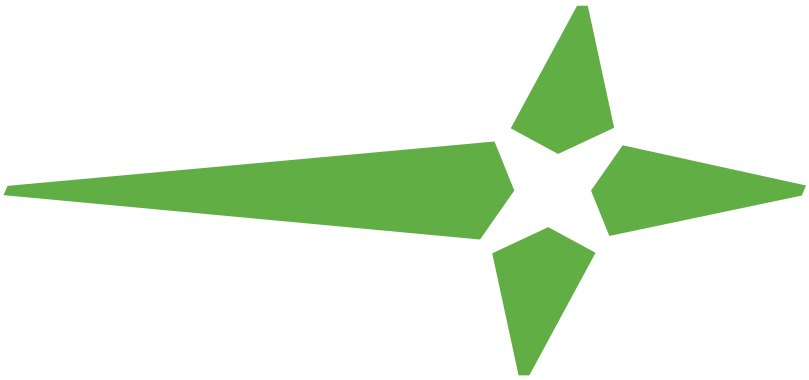
NobleLight®

BlueLight® Large Area UVC Flash Disinfection System

High-speed, large format, pulsed light disinfection for food and beverage production.

excelitas®



About Excelitas®

Excelitas is a leading provider of advanced, life-enriching technologies that make a difference, serving global market leaders in the life sciences, advanced industrial, next-generation semiconductor and avionics end markets. Headquartered in Pittsburgh, PA, USA, Excelitas is an essential partner in the design, development and manufacture of advanced technologies, offering leading-edge innovation in sensing, detection, imaging, optics and specialty illumination for customers worldwide.

Excelitas is at the forefront of addressing many of the relevant megatrends impacting the world today, including precision medicine, industrial automation, artificial intelligence, and connected devices (IoT).

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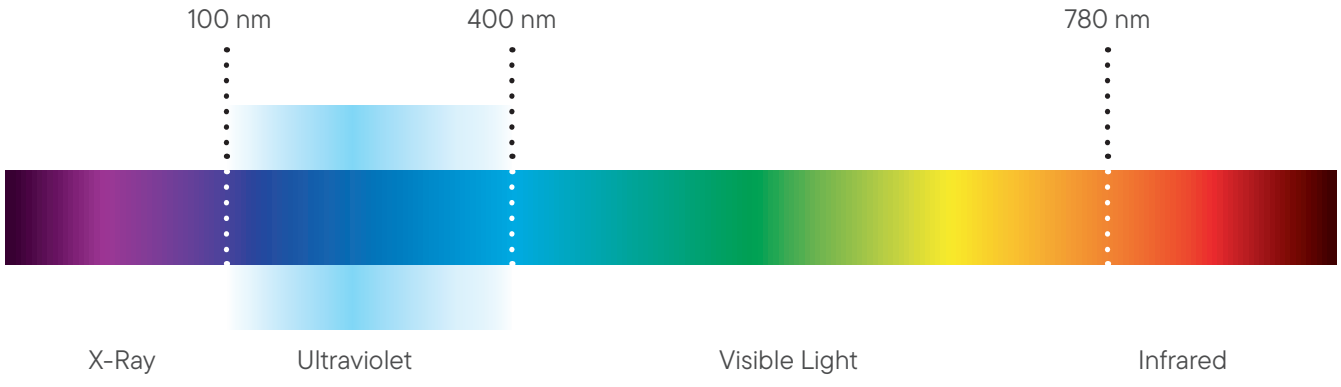
The power of light enables the world around us

Excelitas develops “light” technologies across the electromagnetic spectrum that are integrated into equipment and manufacturing processes to advance the world around us.

Our BlueLight Flash disinfection systems are engineered to emit across the ultraviolet light spectrum. Ultraviolet (UV) light is invisible to the human eye, however its incredibly useful and plays a vital role in many industrial applications, from disinfecting surfaces and water to curing inks and resins.

ELECTROMAGNETIC SPECTRUM

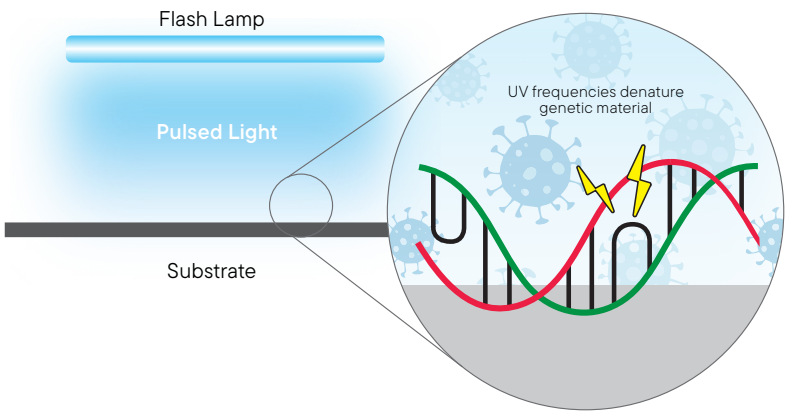


Noblelight
Pulsed Light Disinfection

Excelitas' Noblelight® BlueLight Flash large area disinfection systems provides fast, reliable, pulsed light disinfection for food and beverage packaging production applications - without the need for harmful chemicals or mercury.

BlueLight Flash large area systems are designed to easily integrate into form-fill-and-seal machinery as well as many other types of packaging production machinery. It's powerful modules effectively irradiate a variety of configurations of pot carriers, cell plates, lids and foils. Modular designed components reduces downtime and simplify maintenance. BlueLight Flash systems have a small footprint, making them perfect for applications where space is constrained.

WHAT IS UV DISINFECTION?



UV light denatures the DNA and RNA of microorganisms. When genetic material absorbs photons it causes instabilities such as dimer bridges, preventing replication.

Pulsed UV light, is highly effective at inactivating pathogens at high speeds.

System Features

Designed for high-speed food and beverage packaging lines, the BlueLight Flash large area system delivers instant UV surface treatment in a compact, production-ready design built for demanding food manufacturing environments.

Example Large Installation

Human Machine Interface (HMI)
Touchscreen for changing pulse parameters

Can be integrated into the FCC or remote as pictured

Status Light
Visually alerts operators of the system's status

Chiller Cabinet
Water to water chiller dissipates heat from FLM(s), ensuring longevity and consistent output

Standalone air-to-water or water-to-water chillers are available for certain applications

Electrical Cabinet (FCC & FPC)
Power supply and electrical control gear, providing power to the FLM(s)

Water Circuit
Provides cooling water to the FLM(s) and is controlled by the FCC

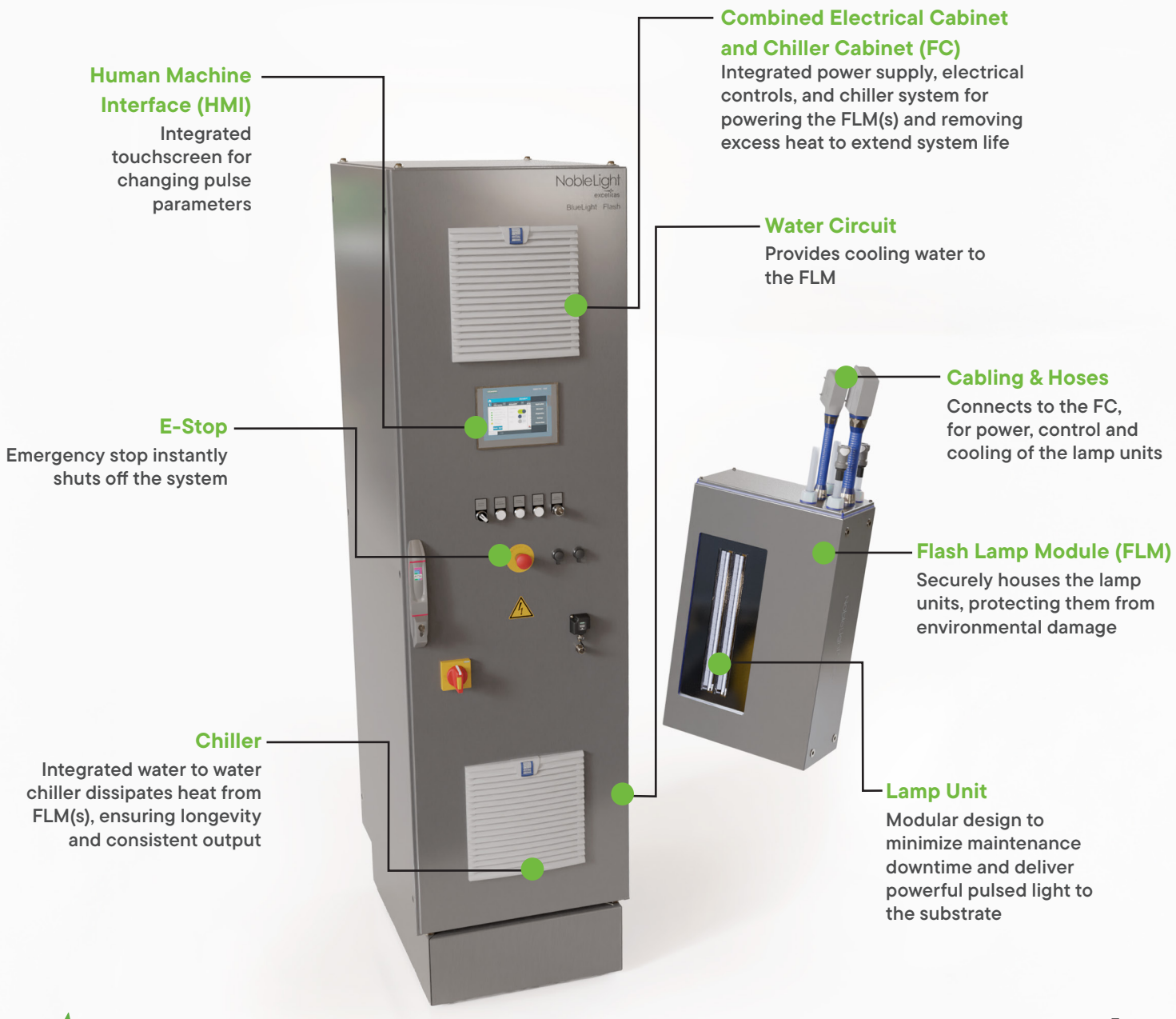
E-Stop
Emergency stop instantly shuts off the system

Flash Lamp Module (FLM)
Delivers photonic energy to the substrate via the flexible arrangement of lamp units

The user-friendly flash control cabinet (FCC) features an intuitive touchscreen interface and a fully modular design. Systems can be scaled from a single flash lamp module (FLM) with one lamp to multiple modules with six lamps each, with FCC size and chiller requirements adjusted accordingly. Depending on the specific application, cooling can be achieved with either water to water chillers or an air to water version.

With flexible mounting options, the FLM can be installed at various angles for smooth integration into production lines. Built to be future-proof and safe, it operates at up to 5 Hz and includes a quartz glass breakage sensor for added protection. The FLM features hygienic design, suitable for use in food production areas.

Example Small Installation



Modularity and Scalability

The FLMs are designed for modularity, featuring tool-free, removable lamp carriers for fast and easy lamp replacement. To meet varying production requirements, systems can be configured with between one and six lamp units. Larger installations can be designed with a single power and control system supporting multiple FLMs, delivering a scalable and cost-effective solution.

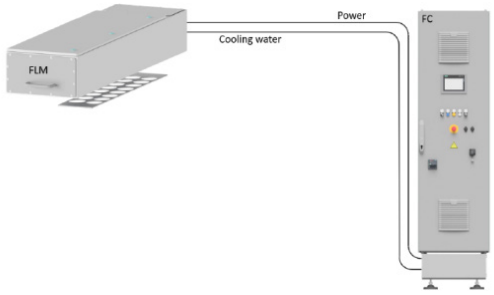
BlueLight Flash Large Area Dimensions

The system comprises two primary components: the Flash Lamp Module (FLM), which houses the lamp units and delivers irradiation to the substrate, and the flash cabinet.

For smaller installations, a single Flash Cabinet (FC) is used, while larger installations typically utilize a Flash Control Cabinet (FCC) and a Flash Power Cabinet (FPC) containing the power supply units (PSUs).

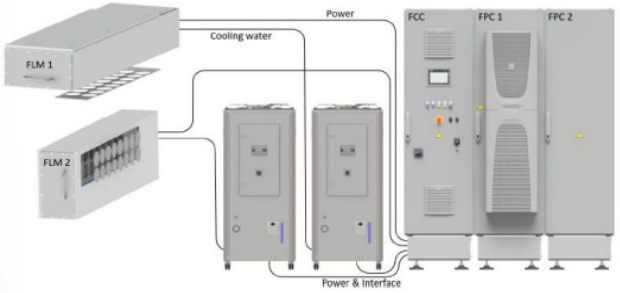
The cooling configuration is determined by the specific application and customer requirements. Depending on the system design, the chiller may be integrated into the FC or supplied as a separate external cabinet.

SMALL INSTALLATION EXAMPLE



One water-cooled FLM with two flashlamps

LARGE INSTALLATION EXAMPLE



Two water-cooled FLMs with six flashlamps each

FLASH LAMP MODULE DIMENSIONS

UV Module Size (mm)	700 x 430 x 250
Radiation Window (mm)	460 x 202
IP Rating	IP69
Mounting Hardware	8 x M10 closed end rivets

FLASH CABINET & CHILLER

Flash Lamp Control Cabinet Size (mm)	600 x 800 x 2100
Control Cabinet Weight (Kg)	350
Cabinet IP Rating	IP54

FLASH LAMP MODULE DIMENSIONS

UV Module Size (mm)	1300 x 430 x 250
Radiation Window (mm)	1060 x 202
IP Rating	IP69
Mounting Hardware	8 x M10 closed end rivets

FLASH CONTROL & POWER CABINET

Flash Lamp Control Cabinet Size (mm)	1800 x 1100 x 2100
Control Cabinet Weight (Kg)	900
Cabinet IP Rating	IP54

FLASH CHILLER CABINET

Flash Lamp Control Cabinet Size (mm)	600 x 800 x 2100
Control Cabinet Weight (Kg)	300
Cabinet IP Rating	IP54

BlueLight Flash Large Area Microbiological Tests

Various microbiological tests with the BlueLight Flash system were conducted by independent accredited institutes and laboratories using a single lamp system. Test material, reference germs, distance and number of flashes were varied. Two pot sizes were tested, 500 ml and 200 ml. Each pot was inoculated with Penicillium Rubens DSM 848 with a minimum nominal germ concentration of $1x10^5$ CFU/Object.

BLUELIGHT® FLASH LARGE AREA MICROBIOLOGICAL TESTS - CONTAINERS

Packaging Sample / Material		Reference Germ	Inoculation Method	Distance Sample to Lamp (mm)	Avg. Log Reduction 2 Flashes	Avg. Log Reduction 3 Flashes
PP Pot Ø95 mm 500ml		Penicillium rubens DSM 848	Multi Dot (Sides and Bottom)	20	4.80	5.10
PP Pot (K3) Ø95 mm 200 ml		Penicillium rubens DSM 848	Multi Dot (Sides and Bottom)	20	4.90	>5.1
PP Pot (K3) Ø95 mm 200 ml		Penicillium rubens DSM 848	Sprayed	20	5.20	5.30

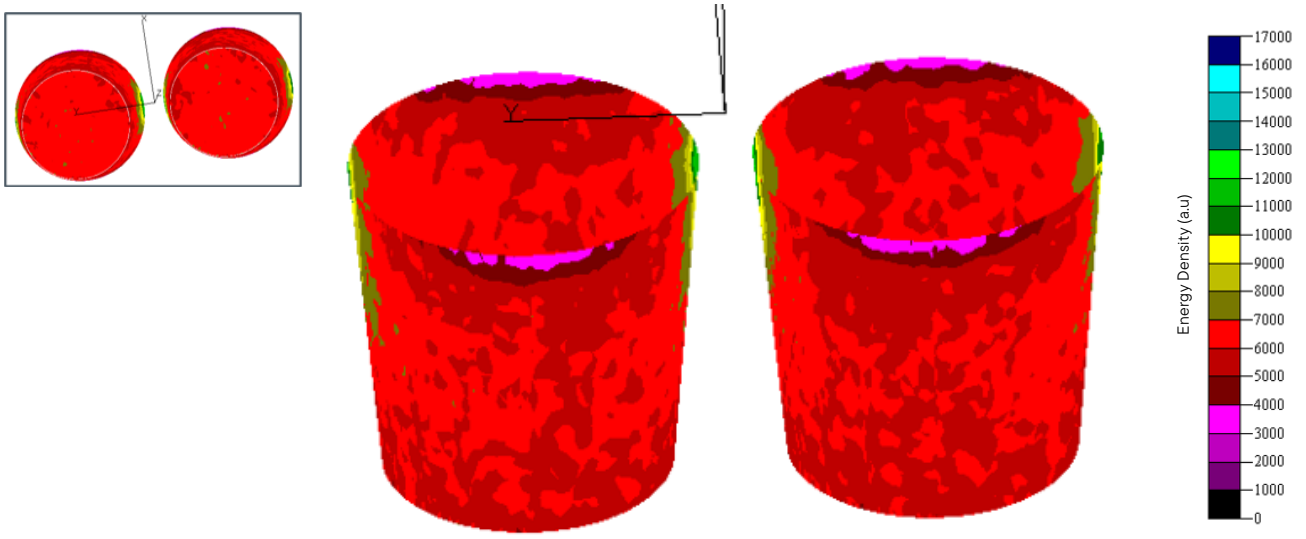
BLUELIGHT® FLASH LARGE AREA MICROBIOLOGICAL TESTS - LIDS

Packaging Sample / Material		Reference Germ	Inoculation Method	Distance Sample to Lamp (mm)	Avg. Log Reduction 2 Flashes	Avg. Log Reduction 3 Flashes
Aluminum Lids Ø95 mm		Penicillium rubens DSM 848	Sprayed	30	4.50	4.80
PET Lids Ø95 mm		Penicillium rubens DSM 848	Sprayed	30	4.20	4.60

BlueLight Flash Large Area Ray Tracing Results

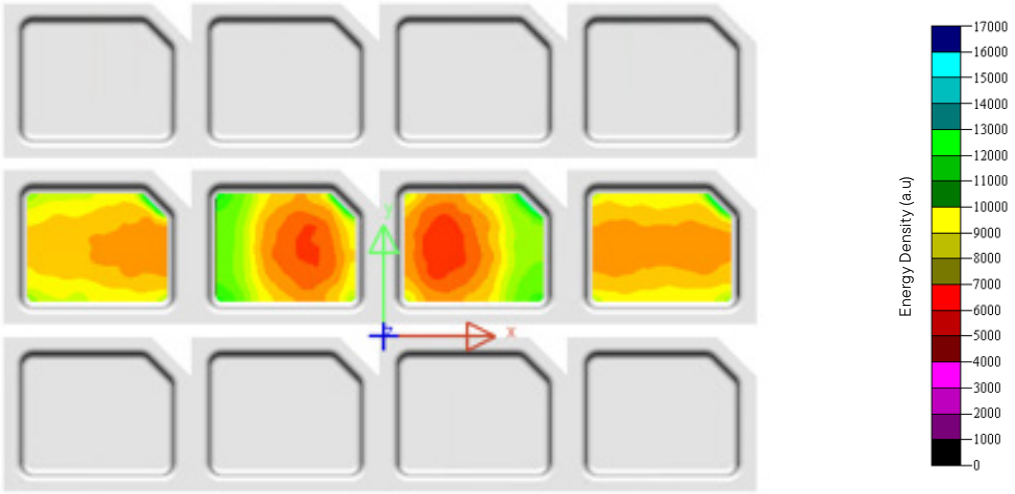
Excelitas has developed a unique ray tracing simulation tool to be able to accurately model log reduction rates across a wide range of food packaging and materials.

Diagram 1: In-house ray tracing simulation of two 1 kg 130 mm diameter generic pots



A single lamp system creates an even dose over the substrates surfaces.

Diagram 2: Ray tracing model showing energy distribution across generic sauce pots



Three lamp system. This trace shows the highest intensity directly under the lamp modules.

TEST BEFORE YOU DECIDE

Make use of our ray tracing simulation and microbiological test capabilities before you decide on a solution. We will be happy to advise you!

BlueLight Flash – for long-lasting enjoyable food and beverages.

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