

LED UV

ADVANCED UV SOLUTIONS WITH
CONTEMPORARY PATENTED DESIGN
FOR WATER, INDUSTRY, MEDICAL
AND BIOSCIENCE



UV LED PRODUCT SERIES
SOLUTIONS FOR FOOD AND BEVERAGE INDUSTRY

- ⇒ CONSULTING
- ⇒ DESIGN
- ⇒ MANUFACTURE
- ⇒ QUALITY
- ⇒ SALES
- ⇒ SERVICE SUPPORT



TruSpectra

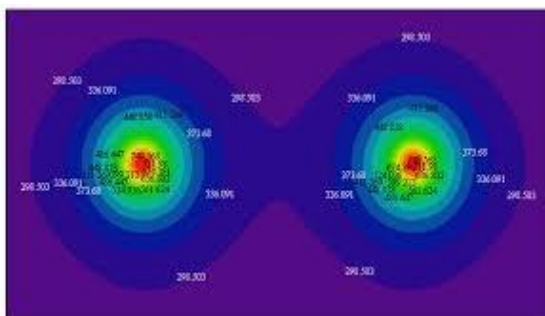
ADVANCED UV LED SOLUTIONS WITH CONTEMPORARY DESIGN

INNOVATION & QUALITY

Verentia relies on high-quality materials and precise workmanship to produce high quality UV systems be it for Bio Science, Curing, printing or Disinfection market. Verentia has developed an innovative UV LED dryer for curing all types of UV coating and adhesives. Depending on the material requirement, the system is available with UV LED curing lamps. Thanks to its compact design, the system can be adapted to suit any production environment



HIGH STANDARDS IN DESIGN, MANUFACTURING AND QUALITY



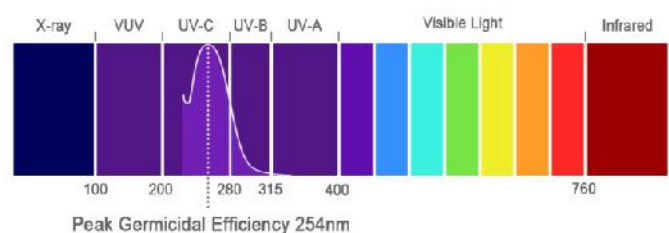
Industrial and medical fraternity at hospitals encounter various tasks, surgeries, examinations and treatments. Hygiene in the workplace is almost constantly challenged. Disinfection Performance and reliability of medical equipment is therefore especially paramount., at the same time, the subject of economic efficiency gains in importance. Intelligent and high quality disinfection solutions help to reduce ongoing operational costs significantly at the same time improving customer trust significantly.

PROUCT DESIGN AND FLEXIBILITY

The use of UV LED technology permits high Irradiance, optimized thermal design allows low heat build-up, a maintenance free service life, high efficiency, high Fluence and thus maximum economic viability. We do more than just design, develop, manufacture and supply electronic power supplies and UV lamps, we specializes in tailoring our UV/LED equipment to our customers' unique technology needs and business environments

HIGH IRRADIATION, DIFFERENT WAVELENGTH & COMPACT DESIGN

TruspectraUV comes with inbuilt high performance LED with high Irradiance factor to suit individual needs of the customer from 230nm to 405nm. TruspectraUV offers unparalleled ease in controlling different wavelength through specially designed electronics which is integrated inside the compact and aesthetic housing at the same time thermal engineering support long life and ease in maintenance.



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ADVANCED UV LED SOLUTIONS WITH CONTEMPORARY DESIGN

CHALLENGING APPLICATIONS

For the most challenging applications, off-the-shelf lighting solutions cannot deliver the performance you need to optimize your system. Often designed for a wide range of applications, these off-the-shelf products simply cannot deliver the same results as a custom LED solution that is designed specifically to meet your requirements

CHIP ON BOARD TECHNOLOGY

At Verentia, we utilize Chip-on-Board technology to create compact, high intensity and uniform LED light sources. We design and manufacture products, from intricate LED arrays to complex turnkey solutions, integrating custom optics, electronics, mechanics and software to provide the best possible solution.

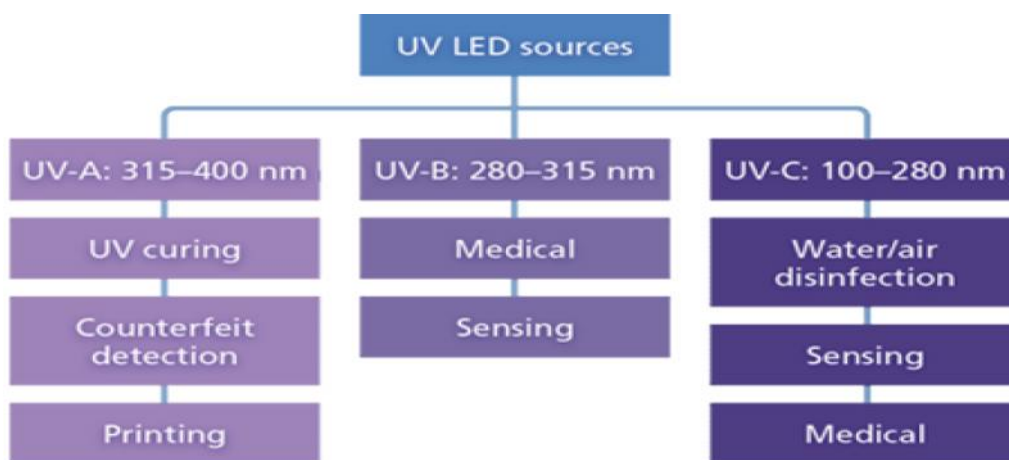
CUSTOM SOLUTIONS

Verentia strengths in LED engineering and related technology allow us to offer the widest range of wavelengths available on the market. We specialize in creating custom LED solutions that utilize multiple wavelengths or non-visible wavelengths such as UV & IR solutions. The strength of our relationships with LED suppliers means that we are always up-to-date with the latest in LED technology..



APPLICATIONS

Visible-spectrum LEDs have penetrated into TV and mobile backlighting, automotive, general lighting, signage, and other markets, ultraviolet (UV) LEDs are just beginning to replace incumbent UV sources in diverse applications, including curing, counterfeit detection, medical, sensing, printing, and water/air disinfection.



- 230 to 400 nm: optical sensors and instrumentation
- 230 to 280 nm: UV ID verification, barcodes
- 240 to 280 nm: sterilization of surface areas and water
- 250 to 405 nm: forensic and bodily fluid detection and analysis
- 270 to 300 nm: protein analysis, drug discovery
- 300 to 320 nm: medical light therapy
- 300 to 365 nm: polymer and ink printing
- 375 to 395 nm: counterfeit detection
- 390 to 410 nm: superficial / cosmetic sterilization



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EXPERIENCE THE FUTURE OF DISINFECTION SOLUTION IN FOOD AND BEVERAGE INDUSTRY

UV technology is particularly suited to the beverage, bottled water and food processing sectors, where extremely high standard of hygiene are expected. Contamination of the process at any point by pathogenic or spoilage microorganisms can have extremely serious consequences for manufacturers. Effective microbial disinfection of the whole process is therefore essential

- ◇ Designed for min 4 Log reduction for microbial air and water treatment.
- ◇ UV is rapidly gaining acceptance across the whole spectrum of food and beverage industries as a highly efficient, non-chemical method of disinfection. UV kills all known pathogenic and food spoilage microorganisms, including bacteria (including *Cryptosporidium* and *Giardia*) viruses, yeasts and molds (and their spores). It is a low maintenance, environmentally friendly technology which eliminates the need for chemical treatment while ensuring very high levels of disinfection
- ◇ Long lasting and efficient light source, high performance aerodynamic light housing, narrow beam optical source with in-built electronic controller system.
- ◇ Exceptionally high UV Fluence and Irradiance, with lower losses and high thermal performance.
- ◇ Ideally for Industry water purification, across food and beverage industries
- ◇ Compact design and virtually maintenance free.
- ◇ Chemical free water disinfection
- ◇ Environmental friendly solutions





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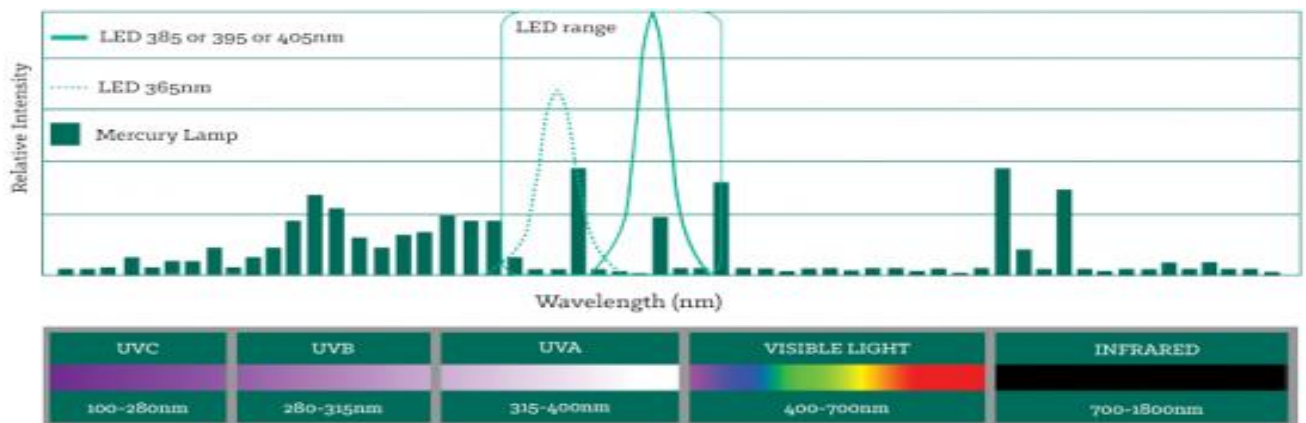
EXPERIENCE THE FUTURE OF UVC LED IN FOOD AND BEVERAGE APPLICATIONS



As more of the food we consume is subject to some form of processing, a growing Onus is being placed on the food Industry to ensure that the food they produce is safe to consume.

Recent trends in certain sector of the food industry directed at the centralization of production towards a smaller number of increasingly large food processing facilities will have important implications for food safety.

Such condition enable a single incidence of food contamination at a facility from which food is distributed over a wide geographical area to potentially affect a large proportion of the population.



Microbial food safety implies the inactivation or removal of pathogenic microorganisms associated with foods, this can, of course, be achieved in number of ways but, increasingly, the use of chemical agents is becoming subject to ever tighter legislative control. This is in part a reflection of growing public anxieties about the possible harmful effects of such agents when ingested. Largely as a result of such concerns, interest is being shown in alternative, so called physical treatments. The use of Ultra-Violet falls within this category.





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ADVANTAGES OF UV LED OVER UV MERCURY LAMPS FOR FOOD AND BEVERAGE INDUSTRY

Ultraviolet light has become a star player in the disinfection world. It is increasingly being used in key applications that require alternative disinfection options. UV disinfection has several advantages including:

Chemical free. UV provides physical treatment without the use of harmful chemicals. No DBPs. No risk of harmful disinfection byproducts being generated as with chemical treatment

Efficient pathogen inactivation. UV is very effective against a wide range of waterborne pathogens, including chlorine-resistant organisms such as *Cryptosporidium* and *Giardia*.

Mercury free. Conventional UV lamps contain mercury, but UV LEDs are free of hazardous materials, which eliminates the risk of a mercury spill due to a lamp breakage.

Compact footprint. High-power-density UV-C LEDs and advanced controls allow for a much smaller footprint compared to traditional UV systems. **Instant on/off.** Systems are intermittent-flow friendly and can instantly be switched on and off without any warm-up time requirements. This also enhances power savings and leads to a prolonged lamp life. **Low maintenance.** Robust technology that is easy to use and maintain.

Temperature independent. LEDs do not transfer heat into the water, thus limiting lamp fouling and ensuring a constant UV output, regardless of water temperature.

LED is reliable and mature technology, LED lamps reliably provide reduced downtime, long lifetimes, and low costs of ownership. **Flexible form factors,** LED technology is fundamentally a more compact technology than traditional lamps due to the LED packaging densities. Chip-on-Board (“COB”) LED technology describes the mounting of bare LED chips in direct contact with a substrate to produce LED arrays

Multi wavelength capability, LED sources provide users with greater opportunity to optimize their DISINFECTION system by designing a multi-wavelength system that closely matches the absorption spectrum of the MEDIA BEING DISINFECTED leading to greater production efficiencies

Precise control each of the LED in circuit can be individually controlled by dedicated driver circuitry. This localized control of LEDs allows for more precise adjustment of the LEDs to improve overall stability and uniformity

Stability and efficient, electronic control allows the light-output & intensity of the LEDs to be kept stable for a long time. further this level of control is scalable from a couple of LEDs to thousands of LEDs.

Reduced downtime: the UV LED lamps windows are routinely cleaned to remove the DISINFECTED material. Apparently Verentia UV LED can be specified with a removable window where the window can be quickly exchanged for a new one reducing downtime



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UV APPLICATIONS IN FOOD AND BEVERAGE INDUSTRY

Direct Contact Water

Although municipal water supplies are normally free from harmful or pathogenic microorganisms, this should not be assumed. In addition, water from private sources such as natural springs or wells could also be contaminated. Any water used either as an ingredient in food or beverage products, or coming in direct contact with the product, can therefore be a source of contamination. UV disinfects this water without chemicals or pasteurization. It also allows the re-use of process water, saving money and improving productivity without risking the quality of the product.

CIP Rinse Water

It is essential that the CIP final rinse water used to flush out foreign matter and disinfecting solutions is microbiologically safe. Fully automated UV disinfection systems can be integrated with CIP rinse cycles to ensure final rinse water does not reintroduce microbiological contaminants. UV LED lamps are ideal for this application because of their compact and mechanical strength, meaning they are not affected by any sudden changes in the temperature of the CIP water, such as when hot (80oC) liquid is instantly followed by cold (10oC).

Wash / Rinse Water

Using UV to disinfect the water used to rinse or wash process equipment and work surfaces can dramatically decrease contamination, increasing shelf life. UV also reduces the amount of chlorine needed to disinfect rinse and wash water.

Filter Disinfection

Stored reverse osmosis (RO) and granular activated carbon filtrate is often used to filter water, but can be a breeding ground for bacteria. Installing UV systems post-filter is a highly effective way of disinfecting both stored RO and GAC filtered water.

Dechlorination

Granulated Activated Carbon filters are used to dechlorinate water following chlorine treatment. Dechlorination removes the 'off' flavors often associated with chlorine disinfection, meaning the flavor of the final product remains untainted and free from unwanted flavors or odors. Placing UV systems ahead of activated carbon filters improves the performance of the filters and results in longer carbon runs, so decreasing operating costs.

Sugar Syrups

Sugar syrups used as flavorings in the beverage, fruit juice and bottled water industries can be a prime breeding ground for microorganisms. Although syrups with a very high sugar content do not support microbial growth, any dormant spores may become active after the syrup has been diluted. Treating the syrup and dilution water with UV prior to use will ensure any dormant microorganisms are deactivated.

Packaging and Surface Disinfection

Surface disinfection systems are used to reduce microbial counts on all kinds of packaging, including glass and plastic bottles, cans, lids and foils. By irradiating the surfaces with UV prior to filling, spoilage organisms are eliminated, extending the shelf life of the product and reducing the risk of contamination.



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TYPICAL PRODUCT SPECIFICATIONS FOR FOOD AND BEVERAGE INDUSTRY



Wavelength	260~280nm	260~280nm	260~280nm
System Power	15.4W	15.4W	14.2W
Estimated head life expectancy	1500-2500hrs		
Operating Ambient time	35°C	35°C	35°C
Operating Ambient humidity	75%RH	75%RH	75%RH
Cooling method	AIR AND WATER COOLED		
Chiller Capacity	50W to 550W		
Chiller Flow rate	1.5LPM—5 LPM		
Pressure Drop	0.0018-0.0022 Bar		
Connections	8" NPT		
Warranty	1 year		
Voltage and frequency	230VAC		
Applications	SOLID FOODS (CHICKEN / BEEF / BISCUITS / PROCESSED CHEESE / MIK SOLIDS, JUICE, CONCENTRATES, ALCOHOLIC BEVERAGES, CANNED FOODS, FROZEN FOODS ETC)		
Finish	Matte black		



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Verentia reserves the right to change the design and drawing in the best interest of the customer without any notice whatsoever

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