

LED UV



UV LED Product Series

SPECIALITY OPTICAL APPLICATIONS



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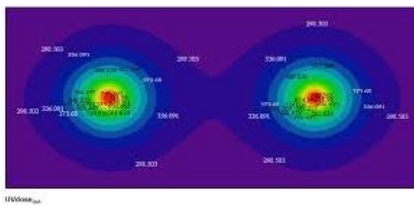
ADVANCED CURING SOLUTION WITH CONTEMPORARY DESIGN

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.

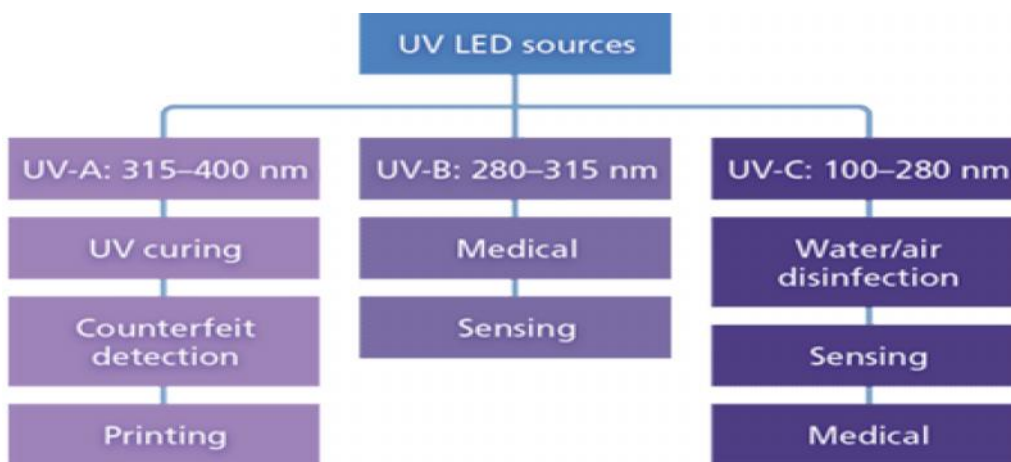


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APPLICATION OF UV LED IN INDUSTRY, BIO SCIENCE AND DISINFECTION

INDUSTRY 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.



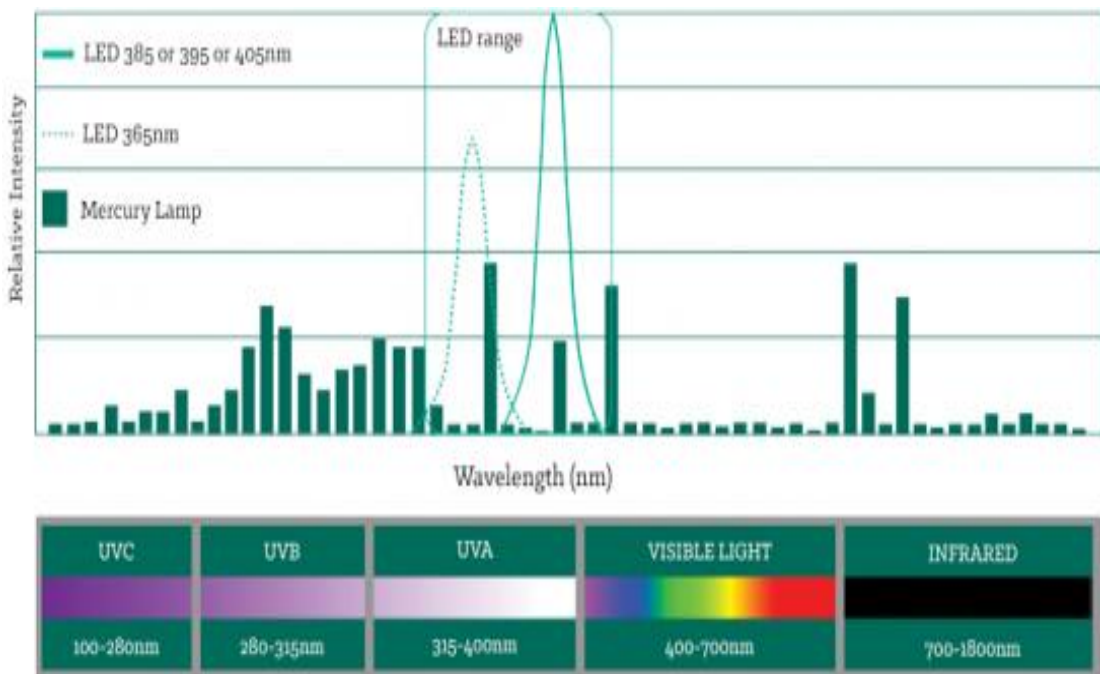
- 230 to 400 nm: optical sensors and instrumentation
- 230 to 280 nm: UV ID verification, barcodes
- 240 to 280 nm: sterilization of surface areas and water
- 250 to 405 nm: forensic and bodily fluid detection and analysis
- 270 to 300 nm: protein analysis, drug discovery
- 300 to 320 nm: medical light 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 UV LED CURING SYSTEMS

UV curing is a process in which ultraviolet light and visible light is used to initiate a photochemical reaction that generates a cross-linked network of polymers. UV Curing is adaptable to printing, coating, decorating, stereo lithography and assembling of a variety of products and materials owing to some of its key attributes, it is: a low temperature process, a high speed process, and a solvent less process., cure is by polymerization rather than by evaporation.



The typical light source spectrum wavelength ranges from Ultraviolet Light (UVC 200-280nm, UVB: 280-315nm, UVA 315-400nm) to Visible Light (400-760nm) and Infrared Light (760-3000nm).

UV LED sources have a concentrated narrow spectral emission. LED sources are typically described by their peak emitting wavelength, but in practice UV LED sources emit in a distribution that is typically +/-20nm from the specified peak. For example a “395nm” LED source typically emits 96% of its energy between 380nm and 420nm with the distribution being essentially Gaussian.



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ADVANCED UV LED CURING CORE SYSTEM STRENGTH

CORE STRENGTH AND CUSTOM SOLUTIONS

Verentia is leading manufacturer of UV and LED based solutions. With solid core strength in designing custom solutions, we understand that our customer need tailor made solutions suiting their process with quality, performance and timely



delivery. Our expertise and experience means that we can rapidly deliver the most precise, efficient and cost effective solution, ensuring that our customer gets maximum performance and value from our systems.

Verentia strength in LED, optical, thermal, CFD and related technology allows us to offer wide range of wavelength available in the market. We specialize in creating custom solutions with multiple wavelength. High Performance optics provides **Peak Irradiance** 27W/cm² (365nm) and 34W/cm² (405nm). **Advanced thermal solutions** provides long land maintenance free life of UV led module

At Verentia we utilize **Chip-On-Board** technology to create compact, high Irradiance and uniform light source. Product Design encapsulates LEDs, arrays, optics and cooling to maximize curing performance. We also specialize in thermal, optical and PCB engineering to manufacture intricate LED arrays to complex turnkey solutions. **Small and compact solutions** with reduced footprint is ideal for space constraints. Flexible and scalable to suit process and production requirements.





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UV LED BASED SPECIALITY OPTICAL CURING SYSTEM ADVANTAGES

CONNECTING YOUR BUSINESS TO THE TECHNOLOGY RESOURCE YOU NEED FOR YOUR SMC/COMPOSITES CURING APPLICATIONS

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 curing system by designing a multi-wavelength system that closely matches the absorption spectrum of the media being cured 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 cured 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 LED BASED SPECIALITY OPTICAL CURING SYSTEM ADVANTAGES

CONNECTING YOUR BUSINESS TO THE TECHNOLOGY RESOURCE YOU NEED FOR YOUR SMC CURING APPLICATIONS

Heat Sensitive substrates, Very little heat is generated from the LED output onto the substrate being cured. This characteristic of LEDs is important for applications where heat sensitive substrates are utilized

Instant switch on, LEDs are instant-on, and can be configured to output light in continuous, flashed or pulsed modes across a wide dynamic intensity range while maintaining the desired spectral distribution.

Real time monitoring, To ensure stability across the lifetime of the lamp, various monitoring functions can be built-in to the lamp such as thermal monitoring of the LED substrate temperatures, short circuit monitoring, or in-rush voltage protection.

Environmental friendly, LEDs are more environmentally friendly than traditional technologies because they emit no harmful UVC or contain toxic heavy metals, such as mercury. LEDs can also tolerate higher ambient operating conditions than traditional lamp technology.

Ease of installation & cost benefit, LED systems offer significant benefits over the life of the lamp. Mercury lamps have short lifetimes and require frequent replacement. LEDs do not require ancillary components such as filters and venting system. Operating costs of LED based systems is also lower due to instant-on/off. Thus supports extended lifetime of the LED over mercury UV lamps..



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OPTICAL CURING APPLICATIONS IN INDUSTRY

OPTICAL ADHESIVES

Optical Adhesives are used to bond or cement optical components together or to an optical system for a number of optical applications. Optical Adhesives can be used with curing lamps to ease or quicken the adhesion process. Optical Adhesives allow precise positioning of optical components within a system by affixing components firmly in desired locations or positions. Optical Adhesives reduce the need for purchasing additional components by allowing existing components to be combined or positioned manually.

Binders may be used for metal-to-glass, glass-to-glass, glass-to-plastic, metal-to-plastic, or metal-to-metal bonding, making them suitable for most optical binding needs. Verentia can support the customers in designing UV led lamps for curing of optical adhesive in controlled environment

Verentia can design the system from 2mW/cm² to 600mW/cm²

UV-Curable Adhesives For Optical Communications

UV-curable optical adhesive systems featuring refractive indices in the 1.45 to 1.59 region controllable to within 0.005 are developed using new fluoro-epoxies and fluoro-epoxy (meth) acrylates. These adhesives possess excellent refractive index matching with optical glass and optical fibres, and the joints exhibit high bonding strength and good durability. These high performance adhesives are readily applicable as optical adhesives in fabricating optical components, attaching fibers to optical waveguides, and splicing optical fibres for optical communications.

UV-Curable Transparent Adhesives for Fabricating Precision Optical Components

UV-curable transparent epoxy adhesives have been specifically developed for the fabrication of optical communications precision devices. The newly developed adhesives using cyclohexane type fluoro-epoxy as the base resin and spherical quartz filler have extremely low volume shrinkage of 1.2% during curing and the cured adhesives have low thermal expansion coefficient of less than $2 \times 10^{-5}/^{\circ}\text{C}$. Sheets of the adhesives are colorless and transparent to visible light because the refractive index of the epoxy matrix resin is matched to that of the quartz filler. These highly transparent adhesives can be cured to a depth of more than 5 mm by using 10 mW/cm² UV-irradiation for 30 min. They also have high adhesive strength and good durability. Therefore, they can be used in the fabrication of optical components that require submicron positioning accuracy



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INNOVATIVE, RELIABLE AND EXCELLENT BENCHMARK PERFORMANCE



Wavelength	365	385 / 395	405
Peak Intensity	27 W/cm ²	27 W/cm ²	34 W/cm ²
Irradiance window	25 x 15	25 x 15	25 x 15
System Power	15.4W	15.4W	14.2W
Estimated head life expectancy			
Operating Ambient temperature	35 °C	35 °C	35 °C
Operating Ambient humidity	75%	75%	75%
Cooling method	Heat Sink / Heat Pipe / Chiller		
Chiller Capacity	250W 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			
Potential free error signal	Earth Fault, Total Error, Lamp Error, Phase Loss, Over Temperature, Output Signal UV Ready, Phase Loss, UV ON		
Finish	Matte black		



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INNOVATIVE, RELIABLE AND EXCELLENT BENCHMARK PERFORMANCE

Irradiance values	<ul style="list-style-type: none"> 1 - 7 W/cm² 8-17 W/cm² 18-26 W/cm² 27-35 W/cm² 36-50 W/cm²
Emitting window length	<ul style="list-style-type: none"> 25 - 100mm 125 - 225mm 225 - 350mm 350mm - above
Cooling Method	<ul style="list-style-type: none"> Heat Sink Heat Sink with cooling fan Heat Pipes Heat Pipes with fan Water cooling
Wavelength	<ul style="list-style-type: none"> 365nm 385nm 395nm 405nm
Applications	<ul style="list-style-type: none"> Adhesive curing, wood coating curing Fiber optic curing Counterfeit, Fluorescence Lithography Printing (Ink) curing Optical coating SMC coating curing

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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