

Large size LED-based illumination systems



idonus offers catalogue products as well as tailor-made solutions for the uniform exposure of large targets. Our LED-based systems are available for the UV, the visible, and the IR spectrum.

idonus offer • Looking at the architecture of our optical systems, they consist of catalogue products for the imaging (e.g., camera, machine vision software) and, in most cases, idonus custom designs for the illumination. Our expertise in the design of exposure systems (UV, visible and IR spectrum) allows us to offer customized solutions: highly uniform irradiance, telecentric on large targets (300 mm × 300 mm and beyond), and with small collimation angle.

LED benefits and applications • Thanks to the tremendous and continuous progress achieved in LED technology, idonus integrates best-in-class power LEDs to devise high-performing illumination systems with custom wavelength peaks, uniform irradiance, collimated light, and large telecentric exposure sizes. Industrial applications fulfilled by our LED-based products encompass photolithography exposure in the near UV, metrology and quality control with uniform illuminations, or machine vision with telecentric optics.

Examples of realizations

- **UV-LED exposure** equipment for photolithography, see our UV-EXP product catalogue for detailed specifications
- **OEM green LED lamphouses** built to work in harsh environment in a production line (oily, 80 °C atmosphere, operated 24/7)
- **Customized LED-based illumination** system with IR and green LEDs for use in the quality control of large displays (matrix of LEDs, non-telecentric illumination, highly uniform irradiance)
- **Large size telecentric** illumination, with parabolic mirror 600 × 600 mm²



OEM green LED lamphouse
The Fresnel lens is 70 × 70 mm². This watertight lamphouse is built for continuous operation in harsh environment.



Customized LED-based illumination • Our client uses this matrix of green (550 nm) and IR (850 nm) LEDs for non-telecentric illumination of wide display panels (400 × 400 mm²).



UV-EXP300S photolithography exposure system • Highly uniform UV irradiance, exposure area of 300 × 300 mm². See the datasheet of our UV-EXP product line for further details.

Historical insight • Nonimaging optics – and more specifically illumination optics – has long been a poor relation of optics, as compared to imaging optics. One obvious reason for this is that it was not until the 18th century that artificial light could be generated from electric current, while the oldest evidence of the use of lenses and mirrors date back to antiquity. Yet, the significance of nonimaging optics is very clear whether for those working in imaging or in machine vision, to cite but only two fields of applications.

At idonus, we are committed in providing high-performance LED-based nonimaging solutions. In a brief historical retrospective, we retain two dates highlighting key innovations in this field:

- 1893 – August Köhler devises an optical architecture for even illumination applied to light microscopy.
- 2014 – Nobel Prize in Physics awarded jointly to Akasaki, Amano and Nakamura "for the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources."

These founding achievements have enabled the realization of very high-performance LED-based lighting systems suitable for industrial use.