

CATALOG

# ARDOP

# Lighting

Our LED  
lighting system  
solutions



[www.lighting.ardop.com](http://www.lighting.ardop.com)



# Who we are?

**ARDOP Industrie**, previously known as ARDOP, was founded in 2002. Since 2017, based in New Aquitaine (near Bordeaux), we accelerated our development and growth. Its trading business offers innovative, cutting-edge solutions in optical & mechanical components, laser safety & optical instrumentation.

**ARDOP Industrie** expanded its offerings by opening **ARDOP Engineering** in 2014. The company specializes in designing, developing, and producing customized photonic solutions.

**ARDOP Industrie** has more than 20 years of experience, and we're proud to announce that its sister company, **ARDOP Lighting** was launched at the end of July 2023, after several years of supporting and developing custom lighting projects.

# Our markets

**Photonics** Technologies is part of the scientific field and technological study related to the generation, manipulation & detection of photons. The applications of photonics are vast and encompass many markets. Hereafter, you will find the main photonics markets where LED technologies can be implemented and where ARDOP Lighting can provide solutions.

- Wellness
- Health
- Transportation
- Defense
- Energy and environment
- Telecommunications
- Agri-agro



# What do we do?

**ARDOP Lighting**, a specialist in LED solutions in France, can help you with any type of lighting project, with or without retrofitting your lighting system. We design and industrialize small and medium production runs/batches, with a standard and customized spectral range, variable and tunable from 230 to 1700nm, on line with the evolution and innovation of LED components. Each wavelength can be controlled individually using our supplied HMI.

## Our resources

- Direct sourcing without intermediaries, with traceability including selection and tracking/monitoring of each LED component.
- Retrofit and design of light engines.
- Product prototyping and rapid iterations.
- ARDOP Lighting operates its production line in France.

# Our offers

ARDOP Lighting puts your satisfaction first. As your privileged partner for standard and customized LED lighting systems, we respond to your (specific) needs with expertise, flexibility, audacity and authenticity. Benefit from a unique experience from **design to industrialization**, with quality lighting solutions to fit to your budget.

Would you like to get started on your CSR (Corporate social responsibility) challenges in the lighting sector? The answer is ARDOP Lighting, with our commitment to the circular economy (see page 15). Come and meet us.

## • LED innovation, creating a light engine to suit the application, to industrialization

What's at stake with a lighting engine? ARDOP Lighting can help you improve your productivity with lighting that's fair, reliable and efficient. Thanks to LED technology, you'll benefit from unrivalled reliability and optimum performance, replacing obsolete lamps such as halogen, fluorescent, Xenon and «special» sources. We can realize your industrial needs. Innovation and the transformation of your company's lighting starts here.

## • Brand distribution and representation

Discover also our distribution platform and a basket dedicated to French partners, manufacturers of light sources. ARDOP Lighting is the exclusive representative of these brands, offering a worldwide network for your lighting products.

## • On-shelf LED products available

ARDOP Lighting, French manufacturer of monochromatic and multispectral bars and narrow beam floodlights, mainly for vision and quality control NDT (Non-Destructive Testing) applications. The product range is available off-the-shelf and in stock, with rapid delivery between 1-2 weeks depending on the product range and the delivery of the country.

## • Retrofit LED – Plug and Play light engine

Ardop Lighting is the lever for your transformation, conversion and technological evolution of your current system, due to a technological breakthrough and a determination to start a «CSR approach».

Let our project team take charge of your needs according to your specifications, with associated project follow-up. Ardop Lighting supports you from start to finish.

## • Services & maintenance

Monitoring of maintainability and your service lifetime.

# Our partners

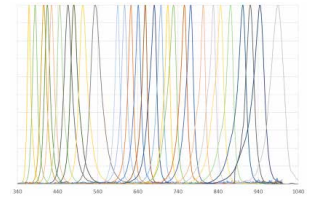


# LED bars

French design and manufacture of standard and custom LED bars

Our **monochromatic or multispectral** LED illuminations are extremely versatile and can be used in a variety of ways (direct lighting, grazing, dome, projection). They are suitable for a wide range of applications, including automation and robotics.

Our range includes spectrally tunable variable bars available in Red, Green, Blue, White or multi-color. They simplify the selection process for organic or inorganic materials and guarantee easy integration. They come until 5-year warranty, depending on the model. The ARDOP Lighting range is dedicated to many industrial vision applications, such as food processing and UV fluorescence.



## Multispectral and tunable LED UV Bars



ARDOP Lighting is proud to announce a new, innovative and unique multispectral UV LED source, spectrally tunable on **UVA-UVB-UVC** range, to illuminate any surface for UV inspection.

Its adjustable with spectral irradiance level ( $W/m^2/nm$ ), for each wavelength, makes it the ideal tool for coupling with the new matrix, multispectral or hyperspectral UV cameras on the market.

This UV LED multispectral broadband source is suitable for UV spectral imaging applications, depending on the irradiance levels required. Bars can be cascaded to increase irradiance levels ( $W/m^2$ ).

You can also create and load other profiles via the HMI and share your preferred parameters and settings with the entire supply chain.

### Main applications:

- QC for inactivating biomolecules and micro-organisms (NDT)
- UV drying and curing: inks, sealants and coatings
- High risk of contamination

### Main analyses:

- Fluorescent inspection, industrial
- UV curing (manual or automated)
- Spectral imaging

### Features

- Monochromatic or multispectral UV bar
- Length 300 mm or 600 mm or made-to-measure
- UVA-UVB-UVC wavelength range from 250 to 402nm
- Irradiance level  $>35W/m^2$  and up to  $100W/m^2$
- Uniformity  $>0.8$  (50X250mm)
- Direct current (CW) or PWM control mode
- External power supply
- Independent wavelength control via USB, Ethernet or RS-232
- Available with 0 to 100% dimming control
- Quartz window
- UV protective glasses and gloves recommended (Ref. ARD-000-K0278-ONTO-54)
- HMI provided (Python)



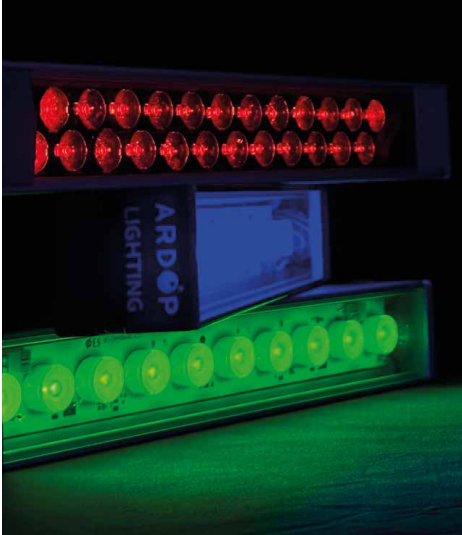
Website



# LED bars

French design and manufacture of standard and custom LED bars

## Variable Monochromatic LED Bars



### Monochromatic LED bar in red, blue, green and white

#### Features

- High-density monochromatic LED bar (up to 24 power LEDs per bar)
- Length 300 mm or 600 mm
- Choice of wavelengths: 370, 400, 450, 505, 530, 625, 655, 730, 850 and 945 nm
- White 3 000K, 4 000K, 5 000K, 6 000K  
Illuminance level >2,000 lux at 50 cm
- Choice of +/-7° or +/-15° optics
- Direct current (CW) or PWM control mode
- External power supply
- Control via USB, Ethernet or RS-232
- Potar version or controllable via HMI (Python)

Website



# LED bars

French design and manufacture of standard and custom LED bars

## Variable and Tunable Multispectral LED Bars



### Multispectral RGB LED bars (NIR)

#### Features

- High-density LED bars (up to 42 power LED per bar) for machine vision
- Length 300 mm or 600 mm
- Illuminance level >2,000 lux at 50 cm
- Integrated wavelengths from 6 to 8 individually controllable: 370, 400, 450, 505, 530, 625, 655, 730, 850 and 945 nm
- White 3 000K, 4 000K, 5 000K, 6 000K
- Choice of +/-7° or +/-15° optics
- Direct current (CW) or PWM control mode
- External power supply
- Python HMI control of each wavelength independently via USB, Ethernet or RS-232
- Available with 0 to 100% dimming control
- Transparent or diffusing PMMA



### 6-channels multispectral LED bars

#### Features

- High-density LED bars (up to 42 power LED per bar) for machine vision
- Length 300 mm or 600 mm
- Illuminance level >2,000 lux at 50cm
- Integrated wavelengths from 6 to 8 individually controllable: 370, 400, 450, 505, 530, 625, 655, 730, 850 and 945 nm
- White 3 000K, 4 000K, 5 000K, 6 000K
- Choice of +/-7° or +/-15° optics
- Direct current (CW) or PWM control mode
- External power supply
- Independent wavelength control via USB, Ethernet or RS-232
- Available with 0 to 100% dimming control
- Transparent or diffusing PMMA



### 8-channels multispectral LED bars

#### Features

- High-density LED bar (up to 42 power LED per bar)
- Length 300 mm or 600 mm
- Illuminance level >2,000 lux at 50cm
- Integrated wavelengths from 6 to 8 individually controllable: 370, 400, 450, 505, 530, 625, 655, 730, 850 and 945 nm
- White 3 000K, 4 000K, 5 000K, 6 000K
- Choice of +/-7° or +/-15° optics
- Direct current (CW) or PWM control mode
- External power supply
- Independent wavelength control via USB, Ethernet or RS-232
- Available with 0 to 100% dimming control
- Transparent or diffusing PMMA

Website



# LED Floodlights

French design and manufacture of standard and custom narrow band LED floodlights

LED floodlights simulating a sun or an illuminant are ideal for a variety of applications, depending on the spectral range you wish to explore. ARDOP Lighting is able to cut the spectrum into triptychs (UV-VIS-NIR), according to the wavelengths you wish to explore, while offering a variable and tunable spectral mix.

Our narrow band LED Floodlights can faithfully reproduce the spectrum of different illuminants such as D65, D50, TL84..., making our LED floodlights is versatile and flexible versatile and flexible, with standard dimensions that can be controlled and programmed. Our floodlights can be cascaded without limit, using a USB and a computer. Useful for a wide range of applications.



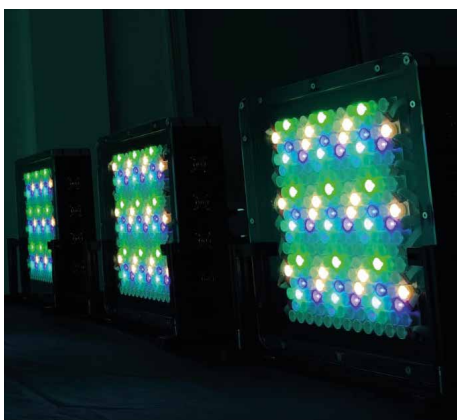
## Monochromatic, multispectral, RGBW narrow band LED floodlights with high illumination

### Features

- High-irradiance LED floodlights (up to 200 klux)
- Dimensions 250 x 250 mm or 400 x 400 mm
- Illuminance level for 1 floodlights >40,000 lux at 100 cm
- Uniformity >0.8
- UV -VIS - NIR wavelength range from 360 to 1000nm
- Choice of +/-7° or +/-15° optics
- Direct current (CW) or PWM control mode
- External power supply
- Independent wavelength control via USB, Ethernet or RS-232
- Available with 0 to 100% dimming control
- Transparent or diffusing PMMA
- Unlimited cascading in series (master-slave)



Website



# LED Uniform Backlighting

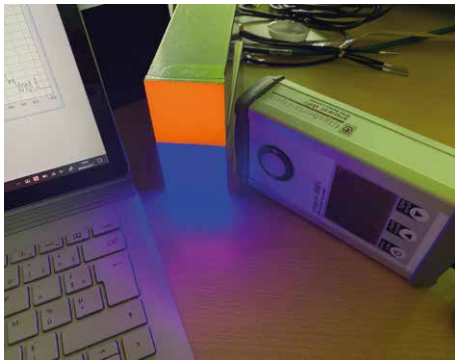
French design and manufacture of standard and customized LED light sources

ARDOP Lighting's uniform backlights generally consist of an LED light source placed behind an optical diffuser.

Several diffusers are available, designed to distribute light evenly over a surface, thus eliminating shadows and hot spots, while improving color mixing, which may be undesirable depending on your application. Diffusers are available in a variety of forms, depending on your requirements: such as plates, sheets or other optical structures.

Uniform source adjustment is possible by controlling luminance ( $\text{cd}/\text{m}^2$ ) and/or illuminance (lux) according to your use cases.

Our monochromatic or multispectral LED uniform sources are available in different sizes and wavelengths from 16 to 32 channels, to serve different industrial markets such as food, agriculture, environment, semiconductor, waste sorting, watchmaking, and many others where machine vision is essential.



## Uniform polychromatic LED sources, high luminance RGBW

Our backlights are capable of simulating solar luminance, and mimic D50 and D65 spectra with luminance levels of up to 1 million  $\text{cd}/\text{m}^2$ .

## Backlighting or uniform LED sources or daylight-simulating backlights

Using LED, we can simulate and generate different phases of daylight, and supply pre-registered illuminants such as A, B, C, TL84, as well as D50, D55, D65, D75.

Our systems can reproduce whites ranging from 1800K to 10,000K, with high and variable contrast levels to highlight surface defects (presence/absence) and shapes.

LED backlighting is available in a range of formats, from 100 x 100 mm square up to 1,500 mm square in some cases.

### Features

- High-density LED backlight (up to 200 klux)
- Dimensions 100 x 100 or 250 x 250 mm or 400 x 400 mm
- UV -VIS - NIR wavelength range from 360 to 1000nm
- Illumination level  $>100$  klx at 10 cm
- Uniformity  $>0.95$  (40 x 40 mm)
- CCT = 1800K to 10 000K
- Direct current (CW) or PWM control mode
- External power supply
- Independent wavelength control via USB, Ethernet or RS-232
- Available with 0 to 100% dimming control
- Transparent or diffusing PMMA
- Unlimited cascading of uniform sources in series (master-slave)



# LED Retrofit

The lever towards a technological evolution

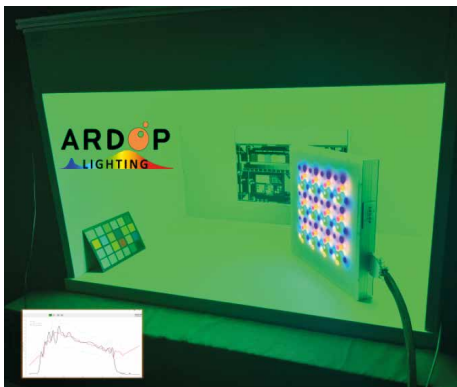
Discover the exceptional energy efficiency of ARDOP Lighting's LED retrofit solutions.

Our latest-generation LED reduce power consumption while maintaining optimum light levels, offering considerable energy savings for your business. By opting for our products, you also benefit from unrivalled durability, reducing maintenance costs and the waste associated with frequent bulb replacements.

What's more, thanks to our advanced control solutions, you can customize the lighting or **your spectral signature** to your specific needs.

Create unique atmospheres and promote the well-being of your employees and customers with dimming, color-changing and programming options.

Opt for quality and environmental sustainability with ARDOP Lighting, your LED retrofit specialist.



## Retrofit of LED lighting systems for improved lighting efficiency and energy savings

**Upgrade:** existing lighting systems can be upgraded by replacing traditional light sources with more energy-efficient LED lighting technologies.

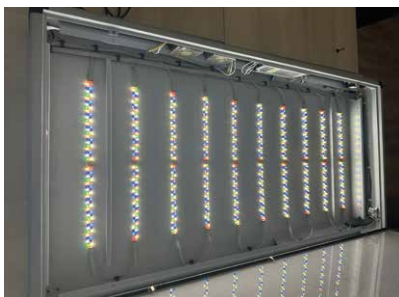
**Enhanced image processing systems:** medical imaging, machine vision and other fields can benefit from photonic upgrades to improve resolution, acquisition speed or image quality.

Retrofitting in the photonics market offers many advantages, including cost savings compared to complete system replacement, reduced environmental impact and optimized performance. It also enables companies to remain competitive by taking advantage of the latest advances in LED technology.

This example shows an LED retrofit to replace old light sources such as T5/T8 fluorescent tubes and halogen lamps by high-performance LED lighting. At the same time, it offers control over light spectra, without modifying the mechanical design. The light engine will deliver better light quality while reducing energy consumption. Thanks to LED retrofitting, you can adjust your spectral colors and create customized lighting moods, visual identities and also reveal defects in materials, enabling you to improve and control production quality.



BEFORE



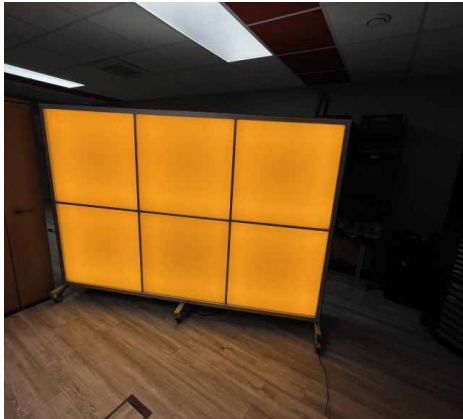
AFTER

# LED spectral room & cabinet

Spectral signature transforms and reveals the true color of your materials

When light is incident on a material, whether organic or not, certain wavelengths are absorbed while others are reflected or transmitted.

By analyzing your materials at specific or unexplored wavelengths, you can determine their chemical composition, structure and purity, or even identify defects in their appearance.



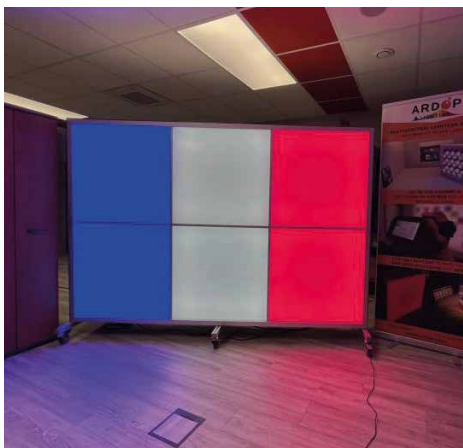
## LED lighting room and cabinet, to showcase your products

ARDOP Lighting, offers the study, design and custom integration of a LED lighting room to replace older-generation sources using compact fluorescent or even halogen technologies. Unfortunately, these sources will soon be obsolete in Europe and in some other parts of the world, so ARDOP Lighting offers to convert them to LED.

In collaboration with ARDOP Industrie and thanks to our expertise in photometry and colorimetry, we work with our customers to draw up customized specifications to define your needs and consider the creation or LED retrofit of your LED light rooms and cabins.

We offer a custom-built lighting room or cabinet, integrating the various illuminants required, delivering the right illuminance in lux, type A, B, C, D50, D65 or other, at the required color temperature, according to the customer's characteristics and needs.

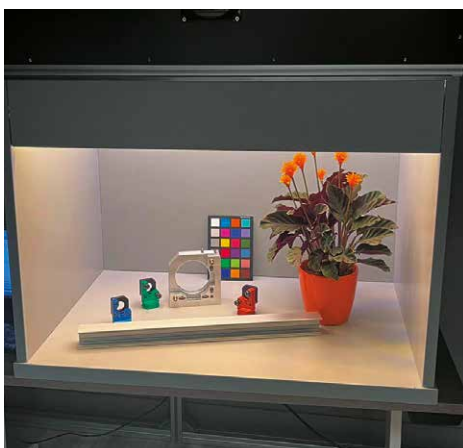
We use up to 50 different LED models to achieve these unique spectral performances. This allows you to control each LED individually to create your own light signature.



## Features

### Lighting room and cabinet, spectral, signature, color

- Dimensions: light engine retrofit, made-to-measure
- UV -VIS - NIR wavelength range from 360 to 1000nm
- Illumination level >100klx at 10cm
- Uniformity from 0.8 to 0.98 depending on the surface
- CCT = 1800K to 10 000K
- Direct current (CW) or PWM control mode
- External power supply
- Independent wavelength control via USB, Ethernet or RS-232
- Available with 0 to 100% dimming control



# Instrumentation

Uniform source of monochromatic and multispectral lighting



## Instrumentation

**Uniform multispectral LED source for integrating sphere and sensor characterization**  
**Application for sensors from UV to NIR**

ARDOP Lighting offers a new uniform multispectral LED source that enables you to replace your current halogen or equivalent technology at lower cost. It allows you to complement your current source with a second sphere aperture to adjust your radiance or spectral luminance ( $\text{cd}/\text{m}^2/\text{nm}$ ).

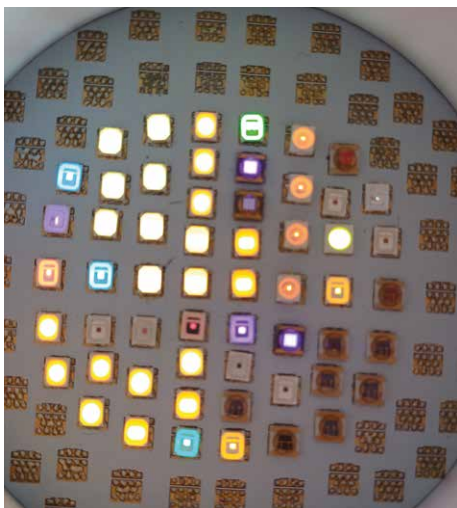
This stable, uniform calibration device is used to calibrate optical sensors.

The aim is to have a spatially flat field, and to control wavelengths, achieving uniformities on your sensor up to 99%.

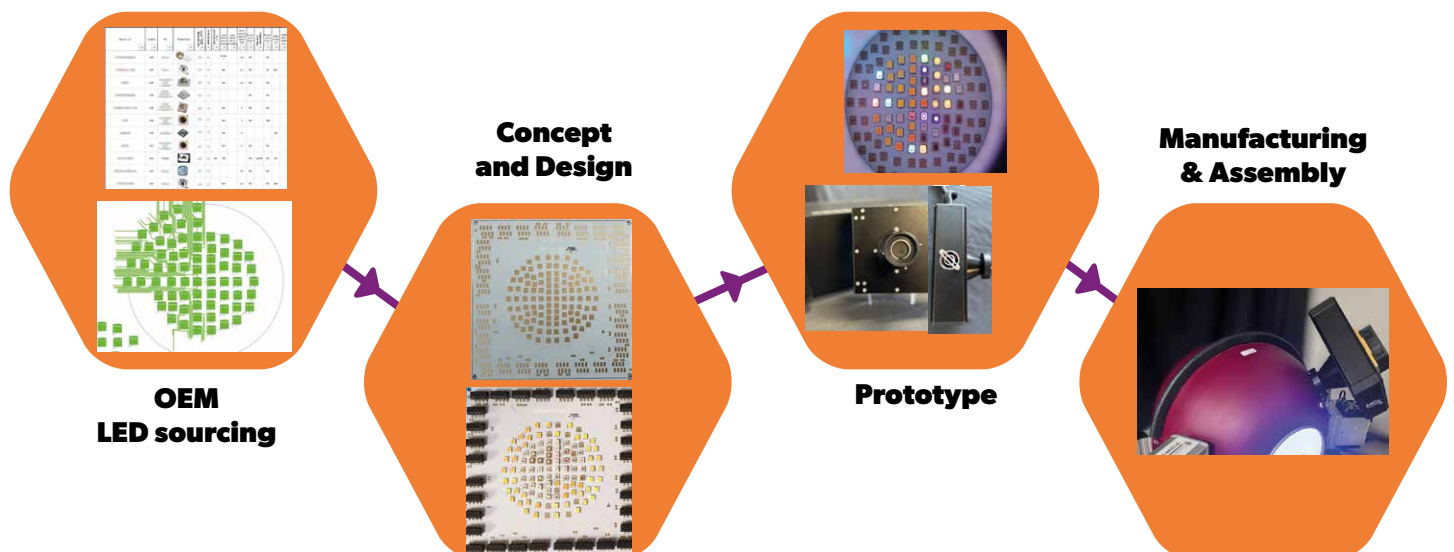
ARDOP Lighting uses more than 50 monochromatic LED models and 40 white LED models following the expected spectrum. To achieve these performances, we select and test over 100 new LED models a year.

## Features

- Dimensions: light engine retrofit and made-to-measure
- UV-VIS-NIR wavelength range from 360 to 1000nm
- Illuminance level without diffusor at cone outlet
- Uniformity up to 0.99 depending on surface
- CCT = 1800K to 10 000K
- Direct current (CW) or PWM control mode
- External power supply
- Independent control of each wavelength via USB, Ethernet or RS-232.  
Python HMI supplied
- Available with 0 to 100% dimming control



## From design to industrialization



# Our offer

## Service & Maintenance

Ardop Lighting ensures the maintainability of its products by offering you monitoring and management of your lighting equipment both on site and in the laboratory.

### S & M on site

- Annual cleaning and performance check according to volume.
- Before/after adjustment if lighting permits.
- On-site visits as required.
- Maintenance and replacement of electronic components and boards, power supply.
- Component tracking over 5 years.
- Issuance of a service & maintenance certificate.

### S & M in laboratory

- Annual cleaning and performance check according to volume.
- Before/After adjustment if lighting permits.
- Maintenance of light engines and replacement of components including power supply and control board.
- Component tracking over 5 years.
- Vacuum component storage (or customer condition) for critical or non-critical stock.
- Issuance of a service & maintenance certificate.



# Distribution

ARDOP Lighting, keen to expand its product range, now distributes lighting systems manufactured in France. These solutions, recognized for their innovation and quality, are specially designed for various photonics sectors.

Our aim is to evaluate our future partners and distribute products made in France. Our lines are sourced to meet the needs of the most demanding customers. While offering optimum performance and unrivalled reliability.

Discover them now and on our website [www.lighting.ardop.com](http://www.lighting.ardop.com)

## LEIDA TECHNOLOGIES

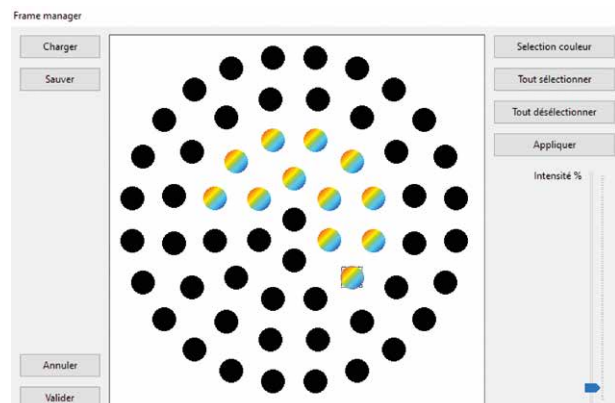


The  $\mu$ Light technology developed by leida Technologies can be used to structure the illumination of a microscopic preparation (patterns and colors).

This technology, combined with software and a camera to form the  $\mu$ Light Vision system, makes it possible to obtain images impossible to observe with conventional optical microscopy. The ease with which  $\mu$ Light Vision can be used makes it ideal for routine applications.

With a strong focus on multimodality (brightfield, dark-field, phase contrast, optical staining, etc.), each image provides different and often complementary information, without the need for complex settings: a simple click switches from one method to another, without any intervention on the microscope, without vibration, without loss of focus.

The  $\mu$ Light Vision system adapts to different camera makes and models without modification (Leica, Leitz, Motic, Nikon, Optika, Olympus, Realux, Zeiss ...).



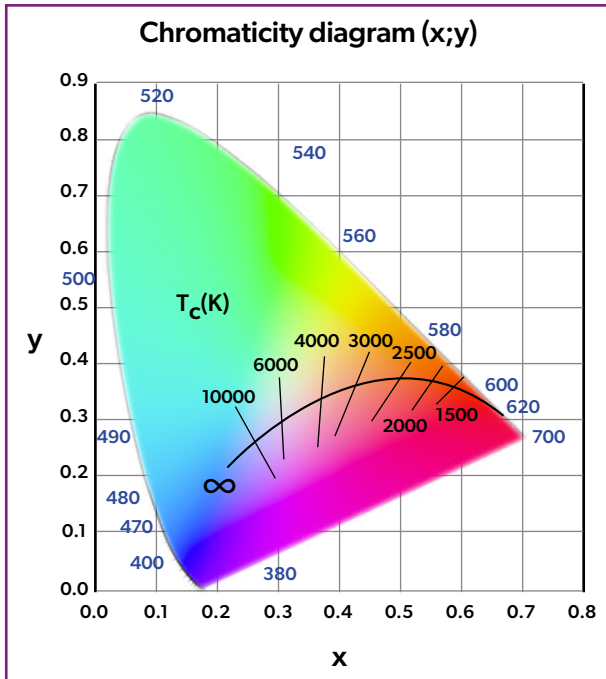
# Technical reminder

## Radiometry - Photometry - Colorimetry

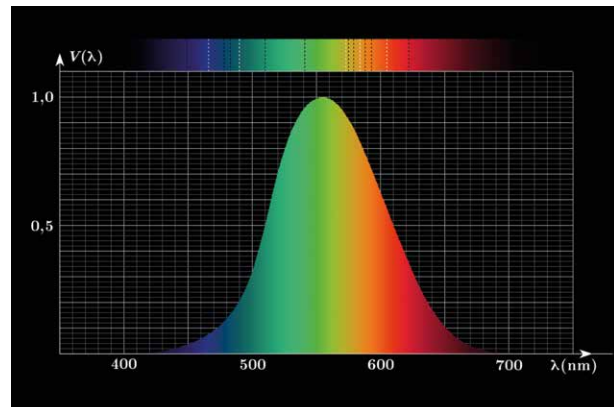
• **Radiometry** measures the energy carried by different types of radiation. We can then dimension an optical system, model the propagation medium, predict the signal on the detector, evaluate the background noise of a measurement...

• **Photometry** is the study of the energy carried by these same rays, but only in the visible spectral range corresponding to human vision  $V(\lambda)$ .

• **Colorimetry** interprets the color perception of human vision to physical measurements by studying the spectrum of radiation. It is expressed according to various standards: CIE 1931, CIE 1976, CIE LAB.



Radiometry	
Ultraviolet	~185 à ~380nm
Visible	~350 à ~830nm
NIR	~800 à ~1800nm
SWIR	~1600 à ~2500nm
MIR	~2 à ~5µm
LWIR	~5 à ~12µm
IR	> 12µm



Photometric	Photometric unit	Radiometric size	Radiometric unit
Luminous Flux	lumen (lm) 1lm = 1cd x 1 steradian	Flux	Watt (W)
Intensity	candela (cd) 1cd = 1lm / steradian	Intensity	Watt per steradian (W/sr)
Luminance	candela per square meter (cd/m <sup>2</sup> )	Radiance	Watt per square meter steradian (W/(m <sup>2</sup> .sr))
Illuminance	lux (lx) 1lx = 1lm/m <sup>2</sup>	Irradiance	Watt per square meter (W/m <sup>2</sup> )
Exitance / Emittance	lumen per square meter (lm/m <sup>2</sup> )	Exitance / Emittance	Watt per square meter (W/m <sup>2</sup> )
Light exposure	lux second (lx.s)	Energy exposure	Joule per square metre (J/m <sup>2</sup> )
Light quantity	lumen second (lm.s)	Energy	Joule (J)

### Radiance & Luminance

Sun  $2 \times 10^8 \text{ W/m}^2 \cdot \text{sr}$   
 Sun  $2 \times 10^9 \text{ cd/m}^2$   
 Computer screen  $100 \text{ cd/m}^2$

**Conversion report**  
 Spectral radiance at photon/second

$$\text{W}/(\text{m}^2 \cdot \text{sr} \cdot \mu\text{m}) \cdot (\lambda/hc) = (\text{photon}/\text{s})/\text{m}^2 \cdot \text{sr} \cdot \mu\text{m}$$

Photon Rayleighs 1 Rayleigh =  $7.96 \times 10^{-8} \text{ photons/s} \cdot \text{m}^2 \cdot \text{sr}$

# Circular economy

## An eco-responsible approach to choosing materials and managing equipment

The conversion of our ARDOP Lighting systems is part of an environmental approach.

Click here to find out more about our expertise and eco-friendly approach.

<https://lighting.ardop.com/retrofit-led-w1>

Our approach is to control the choice of our LED by testing them individually, which enables us to classify them according to their electrical and optical performance. To do this, the strength of having this plurality of classified components enables us to master all the components below to ensure a circular economy approach, based on the following pillars:

- **Energy efficiency**, by offering you the best possible light output for each application, with optimized power consumption.
- **Durability**: thanks to our testing approach, we are able to predict the life of components and estimate a life equivalent to 60,000 hours of lighting, depending on the case. Below this, we undertake to replace the light motor in MOC (Maintenance in Operational Condition).
- **ARDOP Lighting's advanced control system** allows you to optimize the control of components as precisely as possible, and if your structure is not equipped with an automatic radiation cut-off, ARDOP Lighting integrates specific components on its PCB to ensure this cut-off, in particular a programmable timer that follows the switching on and off of your lighting.
- **Well-being and comfort** is a showcase and a visual identity for your materials. ARDOP Lighting's retrofit integrates luminous drivers with CRI>96, which can reach CRI = 98 for certain applications. This CRI provides a visual identity that is identical to the defects observed, enabling to master this value chain by integrating only the light engine.

## An eco-responsible approach to waste processing

Our solution and our eco-responsible approach to waste treatment is to use the following service providers, depending on our recycling needs.

VEOLIA - Suez - Paprec Group - Ecosystem.

These companies are involved in various forms of recycling and waste management, each of them with its own areas of specialization, offering a wide range of services to meet the specific recycling needs of industrial companies.

We also do our utmost to maintain our products in operational condition for as long as possible, and to do this we reuse components from our products.

We're always on the lookout for new, worn electronic boards as soon as we can, drawing on our expertise in testing components and light engines.

## A product recycling initiative is underway, focusing on design and second life.

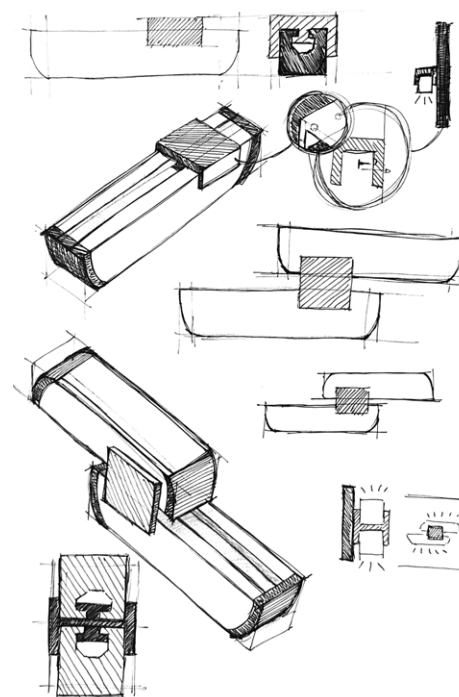
ARDOP Lighting is an innovative and committed company, determined to contribute to a more sustainable environment by taking care of the end-of-life of its products.

Let me introduce myself, my name is Ambre Arnaud, and I'm a second-year student in the DN MADE object design program.

Convinced that eco-design can not only meet consumer expectations in terms of performance and aesthetics, but also bring added value in terms of environmental responsibility.

Together, we redesigned end-of-life LED bars to give them a second chance, a new product.

The aim of this project is to reduce electrical waste by reusing existing components, to conceive a modular and repairable design to extend the product life cycle, and to create a product adapted to your needs, combining durability and efficiency.

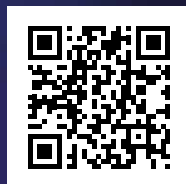




CONTACT  
+335 67 80 57 88  
lighting@ardop.com

1 bis, chemin de la Coume  
09300 Lavelanet  
FRANCE

[www.lighting.ardop.com](http://www.lighting.ardop.com)



LinkedIn

