

LED luminaires, long-lasting and adaptable lighting

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At the core of durable LED luminaires is a process of optimisation for every single component. Read on to learn about LEC's quality chain.

An LED luminaire is not simply an LED in a case. In fact, it is **several LEDs** that form part of a **powerful system** capable of creating and directing **long-lasting and adaptable lighting** in all situations, both in and outside.

A pioneer in outdoor LED lighting for 40 years, LEC are specialists in all aspects of these luminaires, with tailor-made solutions for all **thermal, mechanical and environmental** conditions.

LED luminaires, lighting with 6 components

1. LED source

At the base of the system, the LED luminaire is made up of complex microelectronic materials that comprise the LED source. This source is a **light-emitting diode** that produces light when [a forward direct current is applied](#).

2. Optic

This base is connected to an optic that **directs the light**. To obtain the desired luminous effect, it can include elements such as mirrors, lenses and diffraction grating.

These materials are chosen for their **high-quality characteristics** (e.g. transparency, reflection, diffusion) [to avoid any loss of light](#).

3. Electronics system

In addition to the optic, there is an electronic system that powers the LED. It controls the power, regulates thermal energy and protects against over-voltage.

The choice of power is key to achieving the best lumen output and **saving as much energy as possible**.

The electronic system also enables the LED to be **controlled** via monochrome, trichrome and quadrichrome controllers or DMX, Dali and 0-10V control systems.

4. Heat Sink

As LEDs generate heat, the system features a **heat sink** to dissipate heat. To manage the thermal energy, materials that are good thermal conductors must be used to ensure **efficient internal conduction**, and the design must allow for effective transfer with the air in all conditions.

Each LED luminaire model thus requires **thermal management research** to optimise the evacuation of heat and prevent a loss of **lumen efficiency** and **lifespan**.

5. Protective casing for outdoor lighting

For **outdoor lighting**, the LED luminaire must be protected from **outside forces** such as water, ambient humidity, corrosion, mechanical equipment, impacts, removal, vandalism and [installation methods](#).

For this, it is equipped with a waterproof casing whose quality will reduce the need for **maintenance** and dramatically improve the product's **longevity**.

6. Connectivity

The last part of the LED system concerns the **cabling** and the **inter-connectivity** that guarantees the lighting is fully integrated with its environment. This operation, requiring both electrical and mechanical expertise, should be carried out by professionals and in **compliance with standards**.

This final element makes for a **long-lasting installation** and ensures the product's lifespan is in keeping with the **lifespan of the LED**.

In LED lighting, all these components contribute to its overall durability. One weak link in the chain directly impacts its longevity and efficiency. That is why LEC's experts use their 40 years of expertise to offer **made-to-measure solutions** where each component is tailored to the project.

To find out more, read our [quality chain](#) promises for all the components of LED lighting.

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