

## Why "Dorado"?

After 12 years of experience in the field of street LED lighting, we have reached the general conclusion that street lighting is a simple job, but it is not for simple people.

Good street lighting is a combination of many elements, the right combination of which can lead to a product that is not only cheap but also with good quality.

Let's take a look at these elements so that you, as consumers, can make informed decisions when needed.

### ***First element-housing***

Every trial to assemble a streetlight from an extruded aluminum profile seems unhealthy, adding the lower heat output of extruded aluminum and the problems with its good gasket make us understand why none of the major manufacturers use such housings despite much lower price for production of tooling for their production.

The option of making die casting tool remains the best for the moment, especially when you want to make big series.

After this choice we need to know the power supply of the LED module that this luminaire is designed for. Many manufacturers produce one housing that they use for all their luminaires, whether they can absorb the heat emitted by the LEDs. The idea that the faster the lamp burns the faster customer will need a new one.

When we decide on the power of the luminaire and begin to design its housing, we need to make serious calculations to what extent this housing can be heat-loaded. Accordingly, a design of the housing should be designed or at least decided whether it should be ribbed or not.

Every few years, design trends change. Nowadays, ribbed housings are not only more aesthetic but also reduce the possibility of dust and dirt accumulation between the ribs, which reduces their heat output. We are advocates of the view that the design should be as simple as that functionality determines the shape.

The way to connect the luminaire's handle to the street pole should also be selected. Currently, luminaires are produced and offered which are simply fixed to the handle without the possibility of adjusting the angle of installation. This is of course much cheaper, but given that a large part of the old street poles are distorted as a result of strikes in them, or just their horns are designed for a completely different type of lighting, the newly installed led lights start to shine elsewhere, but not where it should be. Separately, the adjustable handle allows the same luminaire to be used for both street and park lighting when the horn is set to 90 degrees.

Dorado street type luminaires are produced by automated die casting machine molds, designed without ribs, designed to absorb up to 40 watts of power and have an adjustable handle which allows illumination from 0 to 270 degrees.

### ***Second element - LEDs and optics***

The number of LEDs is a compromise between cost, efficiency, housing size and cooling. The larger the number of LEDs, the better they are, and the better the cooling, but they will need a larger body and therefore the ultimate cost of the luminaire becomes uncompetitive. Correspondingly, with a small number of LEDs that "fry" to the maximum, we achieve low efficiency and LED life, but we still use a small housing and our cost is low. Our view is that maximum quality and efficient LEDs should be used to load up to 70% of the maximum set by the manufacturer.

Optics are also an extremely important element to achieve the right light distribution, depending on the mounting height and the spacing of the luminaires. Without selecting the proper optics, dark spots occur between the luminaires, which are a prerequisite for serious road accidents.

The LEDs we use are the latest generation of powerful LEDs of the German concern Osram, the optics we use is the world leader in this field. The Finnish company LEDiL, with the widest possible angle of illumination, allows for even low mounting heights (up to 6 meters), no dark spots between the luminaires.

### ***Third Element - Power Supply***

Power supply of the LED is the weakest element. Its life determines lifetime of the entire lamp. Therefore, it is extremely important to choose the best one. There are many parameters that need to be observed when choosing a power supply. Let's start with efficiency.

The more efficient a power supply, the less losses it will emit in the form of heat and, accordingly, less will heat the whole luminaire.

Possibility of Dimming. Increasingly, customers require the luminaire to be in controlled systems that depend entirely on power capabilities

Implementation of heat compensation. This is a system that allows the voltage supplied to the LEDs to be reduced when reaching temperatures approaching the maximum set by the LED manufacturer. This control is achieved by means of a thermistor located on the LED board, which, via a pair of cables, feeds information to the power supply. When the temperature of the thermistor reaches the maximum set beforehand in the power supply, the smooth reduction of the supply voltage to the LEDs begins by the algorithm, therefore they start to dim, but the temperature of the luminaire decreases and does not allow the LEDs to degrade or burn. This system is extremely important, because if on a hot summer day because of a technical problem or lack of hygiene the street lighting is left to work, its temperature will very soon rise to levels that will lead to its irreversible damage.

Protection from network peaks and overvoltages. In order to protect the luminaire from falling in the vicinity of it the lightning burns or from overvoltages, which are not uncommon on the network, it is necessary to have such protection. This protection is measured in kV and must be not less than 4 kV.

The power supply itself should be highly moisture and dust-proof in the event of penetration into the housing. For example, on a cold winter night, it is heated, when it is switched off in the morning, a vacuum occurs due to differences in ambient and housing temperatures. Even with a very well

protected housing, it can lead to moisture penetration, which, in case of unprotected power supply, will sooner or later lead to its burning.

In the Dorado luminaires, we use Osram Germany powered by 120 to 277 V, which has an IP64.6 kV protection against astrodim dialysis peaks and a 0-10V system with a power factor correction of more than 0,95 and built-in heat-seal.

#### ***Fourth element-connecting elements***

For maximum bond strength in the luminaire, we do not use connectors, all the elements are soldered and covered with a heat shrink. Our view is that where there are moving elements inevitably problems arise.

#### ***Fifth element - fastenings and seals***

All the fixtures used by us are made of stainless steel, allowing even after many years of work to repair the lamp without any problems. Drilling of holes and threads is done by robotized machines with exceptional precision. The luminaire is powder-coated by passing it through a sand blasting machine and degreaser for better adhesion of the paint. The seals are equipped with high-performance and low-temperature additives. Our cover is made of impact-resistant polycarbonate of "BASF" Germany with high levels of light transmission and double UV protection preventing its darkening over the years.

#### ***Conclusion***

We believe that a collection of carefully selected quality elements leads to the creation of a precise end product. We are aware that even the small compromises that can save us as a producer a few euros subsequently lead to the costs of overloading, repairing and subsequent installation of the luminaire, which may even exceed its selling price. That's why we chose our way of developing uncompromising quality, attention to all details and loyalty to not so many but invaluable customers understanding, the need for our dedication to everything we do.