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HOW TO CHOOSE A LED LIGHTING FIXTURE

The right way to understand lighting features

Nowadays many manufacturers of lighting fixtures offer one or more LED's products. One of the main difference from the past is the quantity of technical features which customers must evaluate.

Considering a lighting fixture with traditional light source, in order to describe lighting specifications, it is often enough knowing the absorbed power and the bright source. For example, 400W sodium or 400W incandescence are two ways to give a quite accurate idea about the light amount, its features, (color rendering and temperature), the power consumption, the warm-up time and, not least, the lighting fixture's lifespan. The latter values are steady by now, being the major part of technology tied to traditional light sources and already well developed.

The subject changes instead when we talk about LED sources: the basically different nature of this type of lighting, needs a different approach by the customer and/or by the manufacturer. In fact, there are not available standard LED light sources with a spread barely comparable to traditional ones, and they are not on the horizon, being this technology development a sequence of news every month.

Inevitably, it refers to a series of lighting features as power consumption, lumen, lux, color rendering index, temperature and efficiency (lumen/watt), already valid also for lighting fixtures with traditional light sources, but they were implicitly get by manufacturers and customers with the choice of light source, often for habit (i.e. sodium vapor lamp=high flow, metal halide lamp=good color rendering).

We have already talked about the definition of these sizes in [another article](#); in this one we would explain briefly how it is possible to declare clearly different values for the same fixture depending on the value we refer to. In this case, both customers (industrial field or consumer) and manufacturers must pay close attention.

It is essential to have the photometric diagram of the LED lighting fixture to install: in this way it will be possible reading the light flow's values actually emitted by the lighting fixture. For more expert manufacturers, Cortem Group makes available, on its website, the LTD or IES files to achieve independently the simulations of the light track on the floor or on a level.

This photometric diagram must be calculated respecting a specific standard due to avoid wrong values as in the case the calculation is done on cold lighting fixture (condition of

greater light output than the standard use of lighting fixture). For this reason, Cortem Group's photometric diagrams comply with the UNI EN 11356:2010 and UNI EN 13032-1:2005 Standards.

Furthermore, the careful manufacturer and customer must be suspicious about datasheets not confirmed by photometric diagrams. In fact, you can find on sell products with misleading values of light flow.

There are often used values directly supplied by the manufacturer of LED components, indicating the value of the installed light flow instead of the effective value outgoing from the lighting fixture.

Usually, the manufacturers of LED components supply accurate and reliable values about the product's features through datasheet or specific web applications. These values are found out in specialized and reliable laboratories, but they refer to the single LED in optimal use conditions, often at the monitored ambient temperature of 25°C.

But the features in which LED component will operate once put into the lighting fixture, are different: using the values supplied by the LED manufacturer means overestimate the outgoing flow.

In fact, the nominal light flow does not consider the efficiency of the lighting fixture and its efficacy to make available that flow.

For Ex products this aspect is emphasized by their construction features. In fact, in the lighting fixtures for hazardous areas, the LED is installed behind glasses of heavy thickness or encapsulated into transparent resins, due to protect the surrounding environment. For this reason, because of determined thicknesses and other construction elements tied to the different methods of protection, light beam's features result counterfeit both in terms of emitted light and efficiency.

Nowadays, some manufacturers declare the emission nominal values of LED components they integrate on their lighting fixtures; other ones, have accurately done the measuring of light flow through laboratory test. So, we usually have to compare two quantities completely different. As it frequently happens, the only solution to this problem is the customer information.

The main rule, to which customer must conform to, is always asking to the manufacturer the photometric diagram of the lighting fixture, as first warranty of declared data accuracy, suspecting the values reported on datasheets and catalogs not confirmed by laboratory tests.

This greater attention could bring quickly all manufacturers to use only effective values, measured on the whole lighting fixture by specialized laboratories.