The LEDs (Light Emitting Diodes) are made from semiconductors that are able to directly convert electric current into light. They are only a few millimetres in size, therefore they offer substantial manufacturing advantages allowing a most valid alternative to traditional light sources in many applications. At this moment (end of 2018), this efficiency has reached a level of 180 lm/W for what concerns white lights, and that is more than any other light source could reach. One only has to remember that a low-voltage halogen lamp has an efficiency which ranges from 16 to 25 lumen per Watt and a common fluorescent lamp has an efficiency ranging from 60 to 70 lumen per watt. Naturally, considering that a single LED has an intensity ranging from a few decimal points of a Watt to some watts, in order to obtain the same light intensity of a traditional lamp, we require many LEDs appropriatly connected together, allowing however original and suitable solutions. The maximum light output from a LED is obtained from a correct power supply in constant continuous current which varies according to the colour of the LED. Therefore, in case of products without integrated power supply, it is compulsory to use the specific power supplies recommended or suggested by the manufacturer of the lighting device. An incorrect power supply will almost always cause the breakage of the LED in a very short time. Thanks to their limited size, the LEDs, whether alone or in groups, allow designing compact and thin lighting devices. The light beam, oriented in a determined direction, reduces light losses normally caused by reflectors. In expensive installations or when it is difficult or dangerous to frequently change the light source, the long life of the LED allows undoubtedly a significant saving in maintenance costs. LEDs are particularly resistant to impact and heavy mechanical use. This allows their use in particularly difficult circumstances such as recessed fittings for road surfaces, commercial centres, airports, etc. The use of coloured LEDs also allows the elimination of filters that drastically reduce the efficiency of the device. The reduced consumption of LEDs also allows their use in solar panels or power batteries. In areas where there is the need to illuminate objects sensitive to heat or UV rays, the cold light of the LEDs, without any infrared or ultraviolet emission, is the ideal solution. Because of normal deterioration during its functioning, there is a constant and permanent reduction of the luminous flux, called light emission degradation, and this is mainly caused by the materials with which the LED is constructed and is higher during the first hundred or so hours of functioning, whereas the degradation occurs much slower afterwards. Almost all types of LEDs have a deterioration of about 15% during the first 1.000 or 2.000 hours of functioning. It should be noted, however, that the human eye cannot notice these small changes of light output until we have a reduction of at least 25%. There are many LEDs currently available on the marketplace, but they can be easily divided into 3 main categories: the LEDs from the first category, mounted inside housings of 3 or 5 mm or available in the squared version, are currently the least expensive; they have substantial mechanical characteristics, they are available in many colours and can reach a luminous efficiency of 1 to 5 lumen per Watt, depending on the colour of the LED. Their power is limited to approximately 0.07-0.1W. The average life for these types of LEDs mainly depends on the colour of the LED. For coloured LEDs, the brilliance remains quite constant in time, whereas the brilliance of white LEDs drops already after 2.000 hours and continues to progressively decrease to reach about 20% of its original efficiency after 20.000 hours. Almost all LEDs manufacturers state an average life of about 10.000 hours for white LEDs and 30.000 hours for the coloured ones. The average life is considered the point where the LED still provides at least 40% of its initial brilliance. LEDs from the second category are mainly used inside miniature circuits and are available in a wide performance range with an efficiency of a minimum of 1 lumen per watt to a maximum of 20-30 lumen per watt and a single unit power of 0.05W to 0.5W. In this category, there are LEDs with a life expectancy that ranges from 10 to 40.000 hours for white LEDs. LEDs from the third category are the ones to which we will attach more importance as they are a large step forward in quality for what concerns the lighting sector. These LEDs have a typical power of 1W but, in special versions, this power can be as much as 3 or even 5W for each individual LED. However, we should not confuse Watt power with the quantity of light produced, as the only real important data is the amount of light emitted by the LED compared to the power absorbed, which is measured in lumen per watt (lm/W). To claim a product of 2W power rather than 1W does not necessarily mean that we double the light output, but it means that the power absorbed by the LED has doubled. Therefore it is important to always refer to the quantity of lm/W that is declared for a product. The average life for a PowerLED, if used correctly, is estimated to be over 50.000 hours remembering that at 50.000 hours the PowerLED is still able to guarantee about 70% of its initial brilliance regardless of the colour of the PowerLED itself. Differently to other types of LEDs, PowerLEDs are constructed in such a way that the heat produced is dissipated externally from the LED itself; in this way we obtain a minor degradation of the effinciency. Therefore, it is normal that a light fitting correctly designed with these PowerLEDs has a certain amount of heat, dispelling in this way the myth of cold LEDs. The light of the PowerLED is, certainly and in any case, a cold light because the heat is correctly dispelled through the structure of the lighting device itself. The rate of defectiveness (as for any electronic component), meant as the breakage percentage of the PowerLEDs over a functioning time unit, can be divided into three parts. The first part, commonly known as infantile mortality, is the one with the highest probability of breakage. The second part is the normal functioning time during which the breakage percentage is very low and practically constant. The third part is the end of the useful life of the PowerLED during which the probability of product failure increases. In conclusion, according to tests carried out by the PowerLED manufacturers, it can be assumed a breakage percentage of 1 LED for every 10.000 LEDs within the first 10.000 functioning hours and of 5 LEDs for every 10.000 LEDs in the following 40.000 hours. After this period, this percentage should remain constant, not excluding, so, that more than 99% of LEDs reach a goal of 100.000 functioning hours. It is not thinkable to contemplate a concept of longer life as most certainly other electronic components used in the lighting device will come to an end and this is due to wear, atmospheric agents and tens of other causes which are difficult to determine, if one considers that 100.000 hours of night use is a total of almost 20 years. For what concerns chromatic tolerance or colour temperature, we must remember that these depend on many factors. Therefore, even if selecting the PowerLEDs, the many manufacturers of PowerLEDs guarantee related values within a range that is determined by a fair compromise between quality and price. TECTOR Srl, when necessary and economically convenient, can provide a further selection whether it is in colour temperature or wave length in order to provide a more uniform colour tonality where more lighting devices are used in a single installation. TECTOR Srl, therefore, cannot guarantee the replacement of one or more devices that may have a different chromaticity compared to the minimum and maximum values declared, except for the case where the tolerance was not specifically agreed when the order was discussed and confirmed. As an integration of the normal guarantee conditions prescribed by European Union laws or shown on our sales documents, we wish to point out that despite the valuable characteristics of PowerLEDs, it is impossible to totally exclude failures during their functioning, when this is due to the PowerLED itself and not to external factors. For this very reason, even though PowerLEDs products are maintenance free, the need for repairs or replacement of the failed PowerLED can occasionally occur. In this case, the guarantee comes strictly into force, unless examinations of the case will make it null and void, within a maximum of two years from the date of sale of the device. The company will provide a new equivalent device or will repair the failed one, but will not accept any request for compensation, including costs of replacement, installation, transport, etc.