

# What LED System to Buy

## ***LED Lighting, will it last?***

Manufacturers of high-brightness LED lamps and fixtures, the next generation of lighting beginning to replace today's lighting sources, make wild claims as to product life. How can you determine if the product you are buying will last the 15-20 years claimed?

LED life is measured in lumen depreciation. This is the percentage of light output degradation from the initial light output. The industry standard is determined by the Illumination Engineering Society of North America. Look for LM-80 specifics for determining lumen depreciation. When researching the different LED vendors and their datasheets, look for proper **heat sink** and **thermal management** of silicon junction temperature to discover the lifetime of the LED. Look for lifetime versus junction temperature graphs in LED vendor datasheets that show lumen depreciation. If they do not provide these data sheets and charts, or if they do and the temperatures are above 80C, stay away.

The cooler the LED's operate, the longer they last. For example, an LED chip operating at 45°C will last 200,000 hours, while the same chip operating at 80°C will only last 50,000 hours. It is typically impossible to get the LED's to operate at 40°C or lower without some secondary cooling system, such as a fan. The Solstice system uses a primary heat sink with a secondary fan. This is the most effective way to remove the heat from the LED system. Ask the manufacturer what the heat rating of the product is before purchasing.

The LED power supply or driver design is the other factor that determines lifetime. Make certain that they employ a "soft start" dampening feature with the driver to ensure longevity. Find out how the current is being delivered to the LED. Most companies use either a constant voltage or constant current driver.

The driver being used can give you insight to how well they understand LED lighting. A company that designs an LED lighting system using a constant current driver incorporates a daisy chain system where the LEDs are lined up in series. This type of design typically causes the forward voltage and current to vary greatly from the first LED down the line to the last. Over time, the first LED in the chain will get higher voltage and current causing it to operate hotter and thereby causing premature failure.

Look for companies that incorporate constant voltage drivers in their systems, they typically have a greater understanding of LED technology. ETR products use constant voltage drivers to deliver the voltage to the PCB where the LED chips are mounted. From the board, the voltage and current are distributed to each LED to guarantee that exact current and voltage is provided with little fluctuation.

Safety features: Ask your LED lighting supplier how they protect their lighting array. When spending a lot of money to get a system designed to last 20 plus years, this is a good question to ask. Make sure they have under voltage protection, over voltage protection, and overheating protection. These systems insure your LED lighting system will not be compromised.

In conclusion, before buying LED lighting, make sure to evaluate the system to see if it will last. Look how they thermally manage the system. Determine how they power up their LED PCB boards and how the heat is managed, following these simple guidelines will guarantee the LED lighting system will last.