



LED Light Technology, LLC
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A Female Owned Company

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Low Power Verses High Power LEDs

Low power LEDs are not illumination grade products and any retrofit products using them are doomed to degrade or fail far short of the 25,000 to 100,000 hour life claims made for some of these retrofit light bulbs. The core failure mode is the epoxy package. Optical epoxies will turn brown somewhere between 8,000 and 12,000 hours when exposed to the blue light from the LED die. Toss in white color point stability issues, i.e. they will most likely blue shift within the first 1,000 hours and you have a very unhappy set of end users out there!

For year's now low power LED's have been used as indicators to let you know that your TV, VCR or computer is on, if something was charging, etc. Now, due to scientific technical advancements, high power LED's are capable of producing light levels even brighter and more efficient than light bulbs.

At Light Technology, we sell and manufacture LED based lighting products using high power LEDs. LED Light Technology founders have more than 25 years experience in the general lighting and LED lighting industries. As lighting professionals we know how best to utilize high power LED products to retrofit existing lighting systems to save energy, reduce air conditioning loads and eliminate changing light bulbs and ballasts for many years.

LEDs use science to produce light rather than heat like traditional light sources. High power LEDs consume up to 80% less electricity than light bulbs. Traditional light bulbs are very inefficient, for example incandescent bulbs convert 95% of the electricity to heat and only about 5% to light. It's a very expensive way to heat a building. LEDs convert about 95% of the electricity to light and last about fifty times longer than light bulbs. This is a scientific advancement based on the laws of physics not to be underestimated.

The story only begins with lumens per watt (LPW). LPW has been the vanguard of the industry measurement right up until this robust disruptive LED technology of creating light using science instead of heat arrived on the scene.

During our President, Dan Falzone's years at GE and Philips Lighting they always believed that customers buy light, not light bulbs...light bulbs are just the medium. The true measurement that we now operate on is foot candle levels at the work plane or road surface rather than lumens produced by the light source. It is appropriate to consider that LEDs are directional rather than multi-directional as traditional light sources are. LEDs emit light in a ~90° emission pattern whereas traditional light sources emit light in a 360° pattern.

In traditional lighting fixtures the light is bounced from a reflector losing lumens and useful light, some of the light is bounced multiple times and never reaches the work plane, but the fixtures sure are bright in the ceiling. Since LED light is directed only downward from the semi-conductor material, it delivers a greater number of useful lumens on the work plane while wasting little or none in the fixture.

Recently the LED industry has announced that high LEDs in the lab have achieved more than 125LPW. That is a great milestone but they are not yet commercially available. At this time we have full supply of 80 to 100 LPW LEDs. When this amount of light is properly arranged on a circuit board and combined with secondary optics that shape and deliver more lumens to the work plane you can begin to understand that what is really important is useful light rather than only generated light.

Here is a real world example:



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Existing fluorescent fixture consuming ~90 watts.

After Retrofit with LED fixture consuming ~35 watts.

| | | |
|---------------------|------------------|---------|
| ✓ Area/Light Source | Fluorescent ~90W | LED~35W |
| ✓ Room Window Area | 33 FC | 56FC |
| ✓ Room Center | 21 FC | 60 FC |
| ✓ Room Near Door | 18 FC | 56 FC |
| ✓ Average | 24FC | 57FC |

Another way to look at this is Foot Candles/Watt (FC/W). In this Case FC/W if fluorescent=0.26FC/W and LED=1.63FC/W

This demonstrates that in this case LEDs are 6.2 times more efficient and delivers more uniform light levels across the room.

So we can reduce energy consumed by ~60%, deliver ~twice the useful light and eliminate maintenance for 50,000 hours. LED Light Technology knows of no better way to reduce owning and operating costs of a lighting system than conversion to LEDs.