



## LED's - The Good, the Bad, and the Ugly.

by Eric Strandberg LC

How long has it been since someone asked me about LEDs?... Let me look at my watch. The amount of interest in this (somewhat) new technology is quite astounding. Between the general interest in the "latest thing", a desire to save energy, and a hope for a "silver bullet" to solve all of our lighting problems, everyone is talking about LEDs. So let's take a deep breath and look at some of the issues.



**2- LEDs dramatically reduce maintenance cycles** (you will have "maintenance free" lighting). Again, primarily when comparing to short lived light sources. Most LEDs, by reputable manufacturers are rated at 50,000 hours (L-70). L-70 means that after 50,000 hrs the LEDs have lost 30% of initial lumens. A typical T8 fluorescent is rated at 24,000 hrs., and a high pressure sodium lamp (used in roadway lighting), is rated at 24,000 hrs. So, the LED does last longer, but its only one lamp change saved! Also, the new T8s are rated at much longer life (40,000 + hrs) and induction lamps are well over 60,000 hrs.

**3- LEDs save money?** It is a fact today, that most LED products cost significantly more than the products they replace. So, if we're not saving much energy, and the maintenance cycle hasn't been decreased much, where is the dollar savings? (Especially given that the capital costs will be very high). Most of the scenarios I have seen that "pencil out" and claim to save money use LED systems that, in my opinion will not deliver near as much light as the system they replace. Also, they assume a baseline maintenance cycle that is too frequent, or are too optimistic about the life of the LED system.

**1- LEDs save energy?** Maybe, but mainly when comparing them to applications that use incandescent light. Most of the claims for high lumens per watt (efficacy), are for the LED chips, in the lab. By the time the chip gets packaged, and then put into a luminaire, much of the efficacy has decreased so it is important to look at system efficacy. I have an LED product by a major company that clearly states 28 lumens/watt (it is 7 watts and delivers 200 lumens). This is about equal to a CFL. A ceramic metal halide is over twice that. A T8 is over 90 lumens/watt. Where is the energy savings? Some will say that the color qualities of the lamp have an influence on apparent lumen output. These arguments can only go so far as many conventional sources have similar color temperatures available.

Do I like LEDs? Yes! This is an exciting time in the lighting industry. As long as LEDs are used in ways that capitalize on their strengths; small size, rugged, directional, long life, cold resistant and yes, energy efficient, and we don't over reach on the expectations, then we can find many applications for them today. LED technology is improving rapidly, so hopefully the challenges of today will be solved by developments tomorrow.