

# Re: Long life lights

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- *From:* Eric <me@xxxxxxxxxx>
  - *Date:* Fri, 05 Sep 2008 09:28:33 -0400
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JosephKK wrote:

On Thu, 4 Sep 2008 23:21:00 +0000 (UTC), don@xxxxxxxxxxxxxxxx (Don Klipstein) wrote:

In article <NeydnUT0OMvNwSDVnZ2dnUVZ\_sWdnZ2d@xxxxxxxxxxxx>, Eric wrote:

Don Klipstein wrote:

In article  
<opdj4tfqjptb517apn9fv8i6hk12gfot@xxxxxxx>,  
JosephKK wrote:

On Sun, 24 Aug 2008  
13:27:49 -0500, "Tim  
Williams"  
<tmoranwms@xxxxxxxxxxxx>  
wrote:

I've got a  
problem. I  
happen to  
carry the  
distinction  
of being the  
one  
responsible  
for  
changing  
lights.  
Much as  
that's a  
problem in  
itself, the  
biggest  
problem

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is.....the  
front porch  
light  
(surprisingly,  
it's not a  
stairway  
light, eh?),  
which  
happens to  
be a  
hanging,  
upside-down,  
enclosed  
fixture. And  
they put  
two screws  
in the thing,  
so it's  
almost  
impossible  
for a single  
person to  
replace the  
bulb thus  
inserted.  
Really quite  
remarkable  
how no one  
thought of  
this.

Besides  
modifying  
it, which I  
may  
consider  
because it's  
just that  
bad, in the  
mean time I  
need  
something  
that'll last.  
We've  
already  
tried the  
"ten  
gajillion  
hour" CFLs,  
which died  
in all of,

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you know  
it, three  
months. I'm  
guessing  
something  
high voltage  
(130V+?)  
and  
incandescent.  
Any  
recommendations?

They are still expensive as  
heck, but you can get LED  
lamps. Perhaps  
below US\$50 each for  
100W equivalent, but  
always over 30,000 power  
on  
hours life and some (more  
expensive) are rated at over  
100,000 hours  
power on.

Buyer beware for life expectancy of LED  
"lightbulbs" and the like, especially if they  
are white ones.

100,000 hours is a widely-repeated number,  
to the point of "conventional wisdom".

White LEDs often fade significantly well  
before then – I dare to say they mostly do.  
Colored LEDs, on the other hand, appear to  
me to have most operated for 100,000 hours  
or more to be keeping on trucking rather  
well after working for so long.

It appears to me that better heatsinkable  
white LEDs take 50,000 hours to fade by  
30% at "characterizing current" ("typical  
current") when heatsunk to what I call a  
"moderately conservative extent". Much  
longer life expectancy as in 100,00-plus  
hours appears to me reasonable if they are  
both significantly underpowered and  
heatsunk to extent to keep the junction  
temperature well below the "old traditional"  
maximum recommended LED junction  
operating temperature of 85 C. In general,  
LEDs are more efficient when cooler and

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most blue, white, and non-yellowish-green ones are more efficient when moderately or moderately severely underpowered – even regardless of temperature.

A main difference between white LEDs and most colored ones is that white LEDs normally have a phosphor and over 99.9% of colored ones I have seen don't.

The few colored LEDs that I have seen with phosphor are pastels, pink, lavender/"purple" (as opposed to "violet", which is nearly-UV or an indigo-bluish-violet color with some "blacklight" effects), or a non-amberish maybe-slightly-chartreusish yellow close to 255-255-0 on a usual monitor.

Also beware – violet and UV LEDs with epoxy bodies tend to age fast due to UV or nearly-UV being hard on the epoxy.

I have seen some reasonably credible numbers for even better 5 mm / T1-3/4 LEDs to fade significantly (don't know whether by 30% or 50%) in as little as 6,000 to 10,000 hours. I don't know whether this is at "characterizing current" of 20 mA or at maximum current of 30 mA. Some of this is news years old and some I got more recently.

One model of a white LED nightlight that I tried had "half-life" close to half a year. I would prefer green or blue LED nightlights over white ones for better life expectancy as well as having a spectrum more favorable for stimulating "scotopic vision" ("night vision").

– Don Klipstein (don@xxxxxxxxx)

Instead of using white LEDs would it not be possible to use a number of red, green, and blue LEDs create the effect of white light?

They actually do that. It gives a wierd color rendering effect – with red objects coming out "day-glo" bright and wood tones coming up very reddish/pinkish. Oak has a color like that of mahogany. Skin tones come up reddish.

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– Don Klipstein (don@xxxxxxxxxx)

So how do they make the jumbotrons?

The DLP tv I have uses red, blue, and green LED's instead of a lamp and color wheel.. white screen is nice and white.. but I don't know how that would translate to a lighting application..

Eric

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