



lighting design lab



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Common Areas

February 1997

With the lighting operating 24 hours per day in the common areas of apartments and hotels, can energy efficiency be balanced against cost, quality and style?

One-hundred watt A-lamps dot the center of the corridor, 10 feet apart, as you would expect. A utility auditor's dream right? From an energy standpoint yes, all we have to do is replace the luminaires with twin 13 watt CFLs and the energy bill will drop by two-thirds. The owner is happy because they reduced the owner's utility bill and can now sell the power to another client. The contractor is happy because the power bill went down, the luminaires don't need to be replaced as often, and maybe the utility helped pay for the installation. The contractor is happy because they completed another job and got paid. But what about the occupants of the building? If the occupants are not happy, how long will the owner be happy?

First, I think that retrofitting the incandescent luminaires to compact fluorescent is a fantastic--750 - 1000 hours for standard incandescent, versus 10,000 hours for CFL. For every 1000 hours, the incandescent will last only 42 days on average. The CFL on average lasts 417 days on average. As a personal note, I installed a screw-in CFL that has been on continuous burn. Yes there are long life incandescent lamps that can last 1000 hours, what about light output?

Which leads to an important consideration, lumen output. All too often in the past few years CFL's have gotten smaller and smaller. Still, many downlight luminaires and wall sconces defy retrofit. Even if the CFL fits, how does the light change? That is a tough question to answer, the luminaire was not designed for CFL, probably will not produce the same light output. Even if the luminaire is efficient, about the lighting distribution? I'm sure you all have seen the downlight or wall sconce CFL sticking out of the luminaire. Very efficient!

So now that the correct wattage replacement has been chosen, will it fit into the luminaire? In the past few years CFL's have gotten smaller and smaller. Still, many downlight luminaires and wall sconces defy retrofit. Even if the CFL fits, how does the light change? That is a tough question to answer, the luminaire was not designed for CFL, probably will not produce the same light output. Even if the luminaire is efficient, about the lighting distribution? I'm sure you all have seen the downlight or wall sconce CFL sticking out of the luminaire. Very efficient!

Speaking of lighting distribution, where is the best place for the light in a corridor? The answer would be on the walls or the ceiling. Downlights that just light the floor can be a problem, but what about safety, and the sense of security? Light on the walls and the ceiling is better in producing a secure feeling space than light just on the floor. Light on the ceiling will also reduce the contrast between the luminaire and its surrounding area, reducing glare.



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Often the best choice is not to retrofit, but to replace to a new luminaire. Many producing a significantly greater variety of downlights, ceiling luminaires and CFL than ever before. Yes, new luminaires cost more than retrofitting the CFL the real cost? New luminaires are designed around the CFL shielding the lamp the time, and producing proper lighting distribution and luminaire efficiency. Should we retrofit that 20 year old luminaire? Hasn't it already had a useful life?

Remember our first example, the 100 watt incandescent to 26 watts of CFL. It provided the same initial lumens in the retrofit, because the luminaire was not the CFL we **may** not get the same lumens out of the luminaire. We need to do energy concerns, but weight all of the issues and talk seriously with the client. You may still decide to retrofit, and that's okay. Because either way we get there and that's the most important issue, isn't it?

Incandescent			CFL		
Watts	Lumens	Life (hrs)	Watts	Lumens	Life (hrs)
40	460	1000	7	400	10000
50	530	1000	9	600	10000
60	890	1000	13	900	10000
75	1190	750	18	1250	10000
100	1750	750	26	1800	10000
105 (K105)	1120	12000			
TABLE 1					