



LED lighting: Is it time to switch?

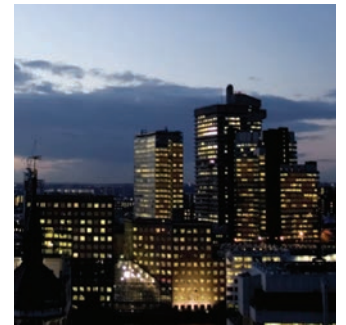


Some commentators are concerned about the amount of 'hype and push'

Whilst many industry commentators hail LED lighting as the 'next generation', others claim the technology is being overly hyped to push growth. So should architects and lighting designers provide more LED solutions to their clients? CP Electronics Managing Director Paul Mans provides a neutral perspective on the business case.

The impressive rise of LED lighting has generated a huge amount of publicity. Whilst there are clear benefits, some commentators are concerned about the amount of 'hype and push'. There are accusations of attempting to boost sales through misrepresentation, including the use of claims that turned out to be scientifically unfounded.

Coming from a company that focuses exclusively on lighting control systems (with no connections to any light source manufacturers), I feel suitably placed to provide a valuable neutral perspective. Indeed, the fact that LEDs require the same amount of control as fluorescent and incandescent sources gives me true impartiality!



LED lighting has seen huge investment in recent years

continued >>

Advantages and disadvantages of LED lighting technology



LED light sources only provide about 70% of their rated output towards the end of their life.

Lifetime

Let's begin with a clear benefit. In offering up to 50,000 hours, LEDs possess by far the longest element lifetime. However, it should be noted that LED light sources only provide about 70% of their rated output towards the end of their life.

One point of concern relates to the comparative life of control gear, which is something that architects and lighting designers must assess carefully. After all, there's little point in having control gear rated for fewer hours than the lamp.

Efficiency

Interestingly, efficiency isn't as much of a clear cut case as you might think. It depends entirely on the quality of the LED being used, which of course has a huge bearing on cost.

While there are clear efficiency benefits over incandescent and compact fluorescent (CFL) sources, the most efficient T5 fluorescent tubes – as widely used in office and high bay lighting – are either the same or slightly more efficient than an equivalent LED. However, we must note here that LEDs are improving all the time, so this may change in the near future.

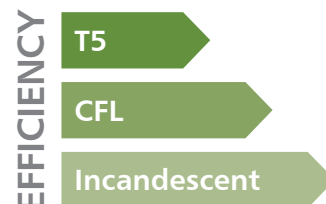
Cost

Across the board, LED lighting costs significantly more. Not only are the elements more expensive, but also the luminaries they fit into due to their unique optical and heat characteristics. This is by far the biggest factor restricting the widespread adoption of LEDs at the moment. The articles I read about new LED installations in offices and factories are very clear about stating how long it will take to recoup the investment cost. For instance, we even know how many years it will take to pay off the 710 LEDs used to light the Turku Cathedral Christmas tree in Finland (3.5 in case you were interested).

Control

Unlike fluorescent lights and CFLs, LEDs start at the rated brightness instantly. They can also be dimmed to almost any level of brightness using a range of techniques. This makes them far easier to control than a fluorescent source, although nowhere near as good as an incandescent source. With colour changing, LEDs also provide by far the best controllability of all light sources – hence the widespread adoption of this technology in complex architectural schemes.

However, particular care needs to be taken if you wish to use the new LED 'light bulbs' in dimmable circuits that previously used incandescent or CFL bulbs. Some LED light bulbs dim, and some don't. But beware those that claim to dim but do a very poor job of it. Definitely try before you buy! The same issue plagued CFL light bulbs. There were very few dimmable CFL bulbs, and none worked too well.



The diagram shows efficiency with the most efficient at the top:



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Conclusion

We must remember that LED as a light source is still a relatively new technology, and that the arrival of most new technology follows a similar pattern. Proclamations of rendering everything that has come before it useless are certainly part of that pattern.

Like new computers and phones, technologies arrive on the scene with a high price and inevitable teething troubles. Over subsequent years, the bedding-in period makes the technology more practical and slightly cheaper. Therefore, we can perhaps say that architects and lighting designers shouldn't feel too pressurised to make the switch to LED just yet. In situations where bulb replacement carries a high cost, such as in street lighting and hazardous areas, LED lighting is certainly an extremely commercially viable solution. But to achieve cost-effective solutions for more traditional applications such as offices and factories, it's fair to say that T5 fluorescent lighting will be around for a long time to come – particularly as the global economy continues to crawl.

Whichever technology is used, one thing remains paramount: the need for an effective lighting control system. Energy saving strategies such as presence/absence detection and dimming in relation to natural daylight are still the most effective means of reducing costs and carbon levels. A properly designed and configured lighting control solution can provide electricity savings of between 20% and 40% when installed in an average office building.

And just to prove that CP Electronics is truly neutral in the great LED debate, every one of our lighting control products works just as effectively for LED lighting as it does for other sources. Commercial lighting can be switched using the relay output of most of our sensors. They can be dimmed as well, provided the fitting has a DALI/DSI or 1-10V dimming transformer. LED light bulbs that are rated as dimmable can be used with our green-i range of occupancy dimmers in both commercial and domestic environments. And where lighting effects such as scene control and colour changing are required, this can be achieved using standard protocols such as DALI. Our Rapid and D-mate lighting control systems can both achieve this



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