

# Spotlight on LED lighting



Switched on: LED lighting requires certain considerations to be taken into account

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Are you switched on to LED lighting? **Giuliano Digilio**, the ECA's head of Technical Services and **Dr Michael Dangoor** of Orlight explain some of the key issues

LED lighting has made rapid advancements in recent years and is starting to have a profound impact in the electrical industry and on the lighting market. So why all the fuss? With light outputs now achieving or even surpassing traditional high-power equivalents, product life longer than most household pets and, of course, energy consumptions that would keep the eco-activists at bay; what is there not to like?

The figures speak for themselves, with forecast growth weathering the recessionary trend and easily surpassing double digits. As LED prices fall, outputs improve, and high-wattage conventional lamps are ousted by government regulations, it certainly appears that LED lighting is set to be the lighting of the future. However, before we all turn our backs on Thomas Edison and dispose of our trusted,



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old-fashioned GLS-type lamps, we must consider that LED technology is relatively new, especially in the electrical contracting sector, and a number of considerations must be taken into account if our clients are to be happy with their investments.

## Output

Firstly, and most importantly, the wattage of an LED product does not equate to light output. This is a significant misconception and needs to be firmly addressed. Performance is based on a number of variables including quality of components such as LED chips and how well the product can dissipate heat. As with all products, quality can vary significantly and, for the time being, there does not seem to be any external or regulatory quality control in the market. It is not uncommon to come across a good-quality lamp with lower wattage surpassing the light levels of a higher wattage unit. It is always advisable to consult lumen output or lux levels to have a more accurate means of comparison. Furthermore, lumens produced per watt can give you a good idea of the efficiency of an LED product.

## Temperature

It used to be a rarity that, when purchasing a lamp, colour temperature would be mentioned. However, LED chips are manufactured along a spectrum of shades that are then processed and placed into bins, depending on how warm or cool they are. Although the exact shade has a number assigned, known as colour temperature, these have been widely generalised into warm, neutral and cool white. The

cooler you get, the greater the light output as reflected in the lumens and lux figures. Be sure to compare like-for-like – otherwise, although you may get the same light level as your old halogen lamp, it may look more like a disco than a living room.

### Beam angles

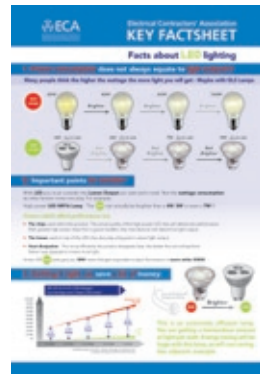
Beam angles are also an important consideration. LEDs tend to have fixed beam angles, with very little or no light extended beyond the margins of the beam. Be careful to ensure the beam is equivalent to the product you are replacing or adequate for any new installation. On this note, the narrower you make a beam, the more light there will be within it. This allows manufacturers to claim higher equivalent light outputs when comparing to traditional lighting, by making the beam narrower.

### Lifespan

The lifespan of LED lighting products can seem staggering, with some manufacturers quoting up to 100,000 hours. Has anyone actually tested a product for 100,000 hours? To put it into perspective, a product would have to run in excess of 11 years if left on for 24 hours a day to determine if it would last that long. Sure, there are tests that can be run to estimate the product life, and the truth is that LED products do last longer, especially if well-made. Although a chip may be rated to 100,000 hours, there are other components that also make up a lamp that can fail. So be slightly sceptical of claims a product will last longer than 15 years or so, especially when the fine print shows calculations are based on less daily usage than your toothbrush.

### Consumer and commercial

Regardless of the above considerations, LED products are proving to be a viable low-energy solution in the lighting market, and not just for domestic use. Ever-increasing light outputs and maintenance-free solutions have proved an



A fact sheet about LED lighting is now available from the ECA. To download, visit the website at [www.eca.co.uk](http://www.eca.co.uk)

### About the author

#### Giuliano Digilio

Giuliano Digilio is the head of ECA Technical Services. He has extensive experience in the electrical and electronic engineering building services industry, and sits on numerous technical committees for the ECA in the UK and Europe.



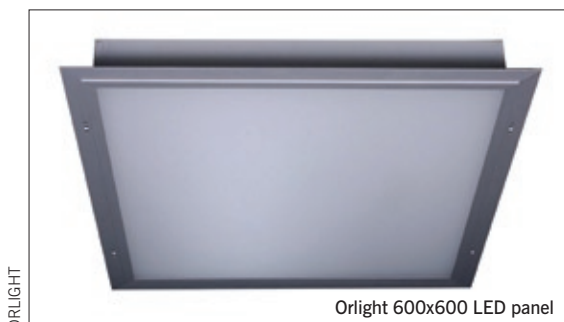
attractive proposition for commercial applications as well. The emergence of alternatives to fluorescent fixtures, such as 600x600 LED light panels and like-for-like compact fluorescent replacements, means that LED technology is becoming more common within the commercial, industrial and retail sectors.

Further benefits may be unexpected – take cold storage-type installations, for example. LED low bay luminaires used in this application not only offer the benefit of an energy reduction, but since they have a relatively low running temperature, less money has to be spent on maintaining a cool environment, compounding energy savings. Such benefits have been widely recognised by the industrial market, where LEDs are not restricted to traditional lighting forms and usage. LED strip lighting, for example, now reaching more than 1,000 lumens per metre, can be used for almost any application imaginable within domestic, commercial, retail and industrial-type installations.

### Initiatives

LED initiatives are being pioneered across the globe as far afield as South America where, for the first time, during this year's carnival in Rio de Janeiro, the iconic monument of Christ the Redeemer overlooking the city will be lit up in LED. It is no wonder that they have chosen this technology, considering the huge amount of energy and money that can be saved. With an extremely long lifespan relative to other forms of lighting and a technology that's free of hazardous material, you have a winning combination. Falling production costs with ever increasing light output and efficiency seem to indicate that we are at the beginning of a trend. **ECAtoday**

■ For further information on LED lighting, contact Giuliano Digilio at [giuliano.digilio@eca.co.uk](mailto:giuliano.digilio@eca.co.uk) or call 020 7313 4825, or email Dr Michael Dangoor at [michael@orlight.com](mailto:michael@orlight.com) or call 01707 663 883.



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