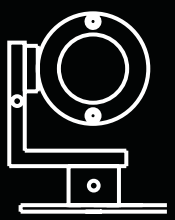
160 lumens per watt! LEDs are more efficient than T5s!

LED Manufacturers measure output at 25º C junction temperature. Unless the luminaire is being used underwater or in a very cold climate, 60ºC junction temperature is more realistic in normal use and that means efficiency falls.

Manufacturers also have a sneaky habit of claiming that what they have just achieved in the lab is now readily available. We are just beginning to see LEDs that really produce 100 lm/W if used carefully, but its not easy to get your hands on them and they're not available in warm white; well, not yet.

A better LED product?

Our new Tadpole is rebuildable. This means if the LED fails or if new technology is developed that would improve your scheme you don't need to throw the whole fitting away. If the contractor blows one up the LED can be replaced. It also means you can change optics on site so you don't always have to guess right at the design stage. You can see the new Tadpole in our demonstration "Colour Issues".



In cold temperatures LEDs become more efficient while fluorescents lose energy

LEDs operate most efficiently in icy cold conditions. This means you have to be careful about using them in Dubai, but in St Petersburg where during winter a T5 fluorescent would be struggling to produce any light, the LED will be brighter than ever.

How much light do you need?

If you want to highlight something you need more light than the ambient. As soon as there is one big flood to compete with your needs escalate. Lighting a building at night we can have a very “efficient” scheme consisting of some lovely council sodium flood lights and 100 x 20w metal halide spots cutting through them to beautifully accent your facade....

OR you could talk to the council or the neighbours, cut out the unnessecary ambient light and produce the same contrast and beauty with 100 x 3w LEDs. The LED may be less efficient in terms of lumens/ watt, but you have saved energy (and a penguin).

What makes a light efficient?

Part L is a bit daft sometimes although it means well. Just because a 20w metal halide lamp is very efficient and a halogen inefficient that doesn't mean that the metal halide is going to save penguins and polar bears. If you only need the output of a 20w halogen dimmed to 70% and need to switch on and off regularly then it is more efficient than the metal halide.

LEDs make a great monochromatic source

LEDs naturally want to be red. Red LEDs are incredibly efficient. With other sources power sapping filters are required to turn the white light red, or blue, or green or...

White LEDs are actually blue ones with phosphors added to make them less blue, that is why warm ones are less efficient than cold ones. You can also make a white by mixing a red, a green and a blue. Or you can programme them to run through a colour chase sequence... had you noticed?

Colour Issues

Our demonstration on colour rendering shows how warm white LEDs compare with high efficiency halogen; they are getting better and better but we're still being told it's not a flattering light. They are so much better now than a few years ago though, perhaps on a par with a good fluorescent?

While all halogen lamps appear to produce the same colour of light this is far from the case with LEDs; LEDs even from the same bin are not necessarily the same colour and as shown in our demonstration "They last forever" colour shifting is highly likely without good heatsinking.

If everyone replaced all their 60w bulbs with an 11w CFL the world would last longer

It might, but wouldn't it be dull? An 11w CFL actually consumes about 22w and it certainly doesn't match the quality (or quantity) of light produced by the bulb. When you switch it on it takes a few minutes to warm up and consumes a bit more energy, making it pretty useless in a cupboard. High efficiency halogen?

CFLs definately have their place though; like all fluorescents they are great space fillers and there have been recent advances in technology including a dimmable version.

Dimming, control and safety

So far it is 1-10v or DMX, both of which require a separate control signal pair to be routed to the driver. As we show in our power distribution demonstration the drivers can be quite far away from the LEDs and because drivers generate DC and the LEDs are usually wired in series, cable losses are negligible.

LEDs operate on about 3.5v. Provided no more than about twelve are wired in series the installation voltage meets SELV regulations. The low voltage, low current and low projected heat makes them possibly the safest light source available.

LEDs don’t get hot?!

Oh yes they do! LEDs don’t radiate significant heat in the light beam though, nor do they emit any harmful UV. This makes them ideal for use in display cabinets. See our demonstration “They last forever”.

Disposable Product, fit and forget?

As we've shown in our demonstration "They last forever, right?", the hotter LEDs get the less light they emit. Permanently.

Additionally as the technology is moving so fast we believe that it is better to make rebuildable products that can be updated with the latest most efficient sources with better colour rendering and stability in a few years time, rather than throw them away.

LEDs are the best at everything

LEDs are tiny, they're very safe and they project no UV and little heat in the beam. The drivers can be very far away and they last a long time if used wisely. They love the cold and are available in low powers that other sources are not available in. They are becoming quite efficient and are definately improving in all respects at an amazing rate.

They are not the answer to all our problems though. The quality and stability of colour is not a patch on halogen, it would be very expensive to use them in an office and we must remember to under run them in Dubai.

The times though, they certainly are a changing.