BRIEFING PAPER

LED (Light Emitting Diode) Spotlights.

Lighting accounts for one of the biggest areas of energy wastage in the office environment and also one that will account for a large proportion of your bill.

If your office has recessed spotlighting, look at replacing the lamps with low energy LED versions. A word of caution; there are plenty LED versions of all types of bulb on the market but many of the cheaper versions fall short of the reliability and effectiveness that LED's are perceived to offer.

LEDs present many advantages over traditional light sources these include -

- **Lower energy consumption** - LEDs produce more light per Watt than incandescent bulbs. Halogen lamps waste 90% of the energy they consume by turning it into heat, not light.
- **Longer lifetime** - an LED's lifetime can range from 30,000 to 50,000 hours, as opposed to 1,000 - 2,000 hours from a conventional Halogen spotlight. LEDs tend to fade over time rather than just 'blow'.
- **Improved robustness** - LEDs are manufactured using expensive tooling and solid materials such as aluminium and ceramics. The use of solid state components means they are difficult to damage unlike fluorescent tubes and conventional lamps.
- **Faster switching** - LEDs light up very quickly.

However, LEDs are more expensive than Halogens. If we take mains powered GU10 spot lights as an example, a good quality lamp will cost upwards of £20 (excluding VAT).

This is primarily because they require more precise current and heat management than traditional light sources, so need circuitry that ensures the incoming current is smooth and constant. They should also feature a static arrangement of fans or slots, in ceramic or aluminium, – commonly called a heatsink – to dissipate the heat.

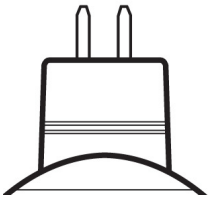
Typically, the higher quality of LED will have a guarantee, in some cases two years. Buying a cheaper version means you will only have to replace it regularly, which may also involve a fitting cost if you pay for your maintenance costs. The cost of the LED is affected by the life expectancy, angle of light and brightness - the greater these are, the higher the price.

The brightness can vary but should be as close to 1,400 Lumens as possible to ensure a like-for-like comparison with Halogen spot lights. In addition, you should be aware that the light from a white LED tends to be a cold blue colour, so opt for a warm light type if necessary. There are also versions on the market that produce a light wavelength similar to that of daylight.

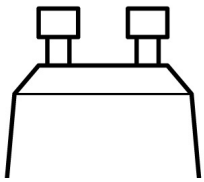
Furthermore, LED spotlights can cover a range of lighting angles, varying from 35° to 120°. The narrower the beam the more targeted the light, so again you should know what the angle of light of your existing Halogen type is before replacing it with an LED variety.

Mains or Transformer?

If your spotlights are not mains powered but driven by a low voltage transformer you may need to replace this as well. The easiest way to tell is to remove a bulb and if the pins on the lamp are straight with no end your bulbs are driven by a transformer - these are referred to as MR16 lamps.



An MR16 connector



A GU10 connector

It is also worth noting that some LEDs are dimmable and the use of dimming can further reduce the impact of lighting on your energy consumption.

Funding the Cost?

It may be possible to get a grant or interest-free loan to cover the capitla cost of purchasing LEDs if you require a large number. contact Ivy Energy Saving for more information.

SAVINGS EXAMPLE

A typical 50 Watt Halogen GU10 spotlight, with a life expectancy of 1,000 hours, will cost £18.50 (including replacement and maintenence costs) a year to run.*

A 2 year guaranteed 4 Watt LED GU10 spotlight, with a life expectyancy of 50,000 hours, will cost 71p a year to run. It's usage will save 56 Kgs of CO_2 emissions.*

* Based on an annual usage of 2,500 hours.

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