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Shining a light on low energy lighting ideas

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Lighting in offices and buildings can often be an illuminating experience. With so many choices, options and legal requirements, it can often feel like you are sitting, quite literally, in the dark.

Whereas restaurants and retailers were the prime users of lighting, facilities managers are now having to take guidance on the use of correct lighting. The old LG3 code for office lighting has recently been renewed to LG7 by CIBSE and the Society of Light and Lighting. 'The guide: Office Lighting' highlights fundamental areas for building designers and facilities managers. The guide is heavily used by CIBSE members and LCC's (Low Carbon Consultants) to provide and recommend low lighting solutions to clients.

As part of the EPBD (Energy Performance Building Directive,) 2007 energy consumption will have to be capped or reduced by organisations. According to CIBSE (Chartered Institute Building Services Engineers,) lighting in offices should be 11W per m². With this in mind, lighting is often the easiest and most cost effective thing to change in order to reach energy savings and specific targets.

Five to 10 years ago low energy lamps were expensive, difficult to obtain and not aesthetically pleasing. Today, the fast speed of technology has meant that improvements are being continually made. For example, Halogen lights that produced 50W can now be swapped for LED lights, which have an output of just 3W. With the average energy unit costing 14 pence, this means that significant savings can be made.

Lighting schemes are an integral part of any business. With



thousands of lighting products on the market, it can be difficult to know which scheme will give the best light and be the most energy efficient. More than 40 per cent of the energy used in a commercial building comes from lighting. Energy saving lamps and fittings are now available to reduce your energy bill on lighting by 50 per cent. On the September 1, the traditional 'light bulb' was phased out throughout the European Union. The change in legislation is expected to save the EU one million tonnes of CO₂ in the next 11 years. The change in law will mean that EU countries will not be permitted to manufacture and import traditional light bulbs. However, there is currently no legislation to stop businesses and consumers from using them.

Lighting control systems can provide extra savings. Systems such as PIR and dusk/dawn lux sensors are easy to install and can make a real impact. PIR (Passive Infra Red) sensors work on an occupancy sensor. Daylight systems work on a basis where if ambient light drops to a certain level it will switch on. If ambient light increases to the point where lighting is not

needed it will turn off. However, daylight systems do override PIR systems, which in some instances can cause frustration, as lights can go on and off too frequently. This mainly happens in offices where the light level varies at different times of the day. An alternative to the switching on and off due to daylight sensing, would be dimmable fittings with daylight sensing. This would give a phasing in and out solution and yet still remain cost effective.

The change in lighting technology has enhanced the business office, but more so in areas that use lighting on a more frequent and longer term basis. For example, restaurants, retailers, petrol stations and hospitals could be the biggest beneficiary. Cavendish Engineers has recently worked with petrol giant Shell to help improve their energy efficiency within their petrol stations and shops. The appointment ties in with Shell's commitment to reducing their carbon footprint by 40 per cent in the retail sector with their Green Site programme being rolled out worldwide. We used the Green Sites Programme survey tools to survey sites and develop a retro fit specification. The survey

identified areas where energy could be reduced significantly including: the under canopy, LED illumination and re-engineering of the air conditioning systems. The LED illuminations that will be installed into the canopy lighting have been reduced from 400W to 180W. We have also installed daylight and PIR sensors to the lights, which will give further savings. Although the initial outlay for the lights was more than traditional lighting, they will benefit quite quickly due to their high usage.

The same principal could be applied in offices of all sizes. Lighting is now not only a way to illuminate areas of work, but it can demonstrate a mood, a theme, or give an area real atmosphere. Facilities managers are now being required to give lighting the same presence than you would at home. Lighting will therefore remain a fundamental area for FM's to consider, so make sure you can shed some light on the matter.

* Lighting guide is available from CIBSE. Or see www.cavendishengineers.net for further information.

Fire safety in construction

HSE have announced that there are approximately 11 construction fires everyday. It is therefore imperative that precautions are in place in the event of a fire occurring. The Construction Design Management Regulations 2007 (CDM) were introduced on 6th April 2007 to cover the fire safety on construction sites.

The CDM Regulations are broken down into five parts:

Part 1: The application of the Regulations and definitions.

Part 2: General duties that apply to all construction projects.

Part 3: Additional duties that only apply to notifiable construction projects (those lasting more than 30 days or involving more than 500 persons for construction work).

Part 4: Practical requirements that apply to all construction sites.

Part 5: Transitional arrangements and revocations.

Construction Design Management Regulations require those designing, planning and carrying out projects to take construction fire safety into account. The regulations should be adopted and implemented into the policy, procedure and practice in order to be effective.

Construction sites can pose particular problems in terms of escape routes because they may be incomplete and complicated or obstructions may be present. These routes may also be unfamiliar and inconspicuous to workers or visitors. There may therefore be a need for special arrangements as people can easily become trapped,

especially if working above or below ground level. An open site will be less of a risk as there will be many means of escape.

On a construction site there is a need to ensure the following:

- Wherever possible, there are at least two escape routes in different directions
- Travel distances to safety are reduced to a minimum
- Enclosed escape routes such as corridors or stairwells can resist fire and smoke ingress from the surrounding site. Where fire doors are used, self-closing devices should be fitted
- Escape routes and emergency exits are clearly signed
- Escape routes and exits are kept clear
- Emergency lighting is installed if necessary to enable escape
- An assembly point is identified where people should gather to be accounted for

Regulation 40 of the CDM 2007, enforced by the HSE, covers Emergency Routes and Exits. Within this regulation it states that all emergency routes or exits and any fire-fighting equipment and how to use it shall be indicated by suitable signs and that where necessary, emergency lighting should be provided so that an emergency route or exit can be used at any time. Fire action notices should also be clearly displayed where everyone on site will see them, for example at fire points, site entrances or canteen areas.

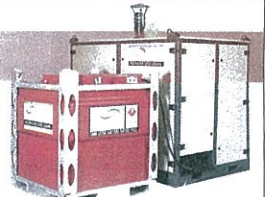
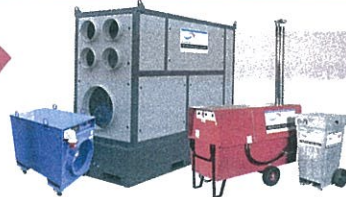
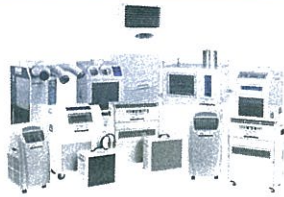
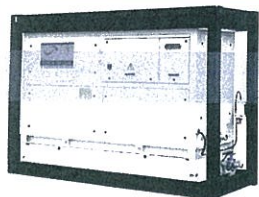
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